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U. S. DEPARTMENT OF THE INTERIOR,
BUREAU OF EDUCATION,
WILLIAM T. HARRIS, LL. D., COMMISSIONER.

ART AND INDUSTRY.

EDUCATION

IN THE

INDUSTRIAL AND FINE ARTS

IN

THE UNITED STATES.

BY

ISAAC EDWARDS CLARKE, A. M.

PART III.—INDUSTRIAL AND TECHNICAL TRAINING
IN VOLUNTARY ASSOCIATIONS AND
ENDOWED INSTITUTIONS.

WASHINGTON:
GOVERNMENT PRINTING OFFICE,

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CONTENTS.

INTRODUCTION.—PURPOSE AND PLAN OF PRESENT VOLUME (XXI-LII).

The present volume largely given to the history of the Mechanics Institutes and similar Associations in the cities of the United States—Accounts of several modern Institutes founded by individual citizens are also included—Plan of this volume described as modelled after the two preceding volumes of this Report—Concise statement concerning the volumes which are to compose the completed Report—Resolution approving Part II. passed by National Educational Association, in 1892—Reference to certain statements in Part II.—Summary of plan and contents of the two preceding volumes—Sketch of the rapid development of the Manual Training movement in the United States—How this movement affected the preparation and issue of the volumes of this Report—Symptoms of an educational reaction from mere mechanical training to artistic development—All educational subjects must, in time, find their just relative place in any intelligent scheme of education—The claim of a place for Aesthetics as rational as that urged for Mechanics—The Industrial Art Training Ideal comprehends both features—The claims of High Art recognized and provided for in their completed plans, by the founders of the New Educational Methods begun in Boston, in 1870—Walter Smith, a professional Sculptor, as well as Art Master—Elementary Drawing in all the grades of the Public Schools designed to lead on to the Professional Art Schools; just as the Public High Schools prepare for the Colleges and Universities—Reference to the late Mr. Charles C. Perkins, as one of the founders of the Museum of Art in Boston, Massachusetts.—Confusion in the discussion of the question of the value of different methods and subjects of education, arises from lack of differentiation between the educational and economical features;—the pedagogic and pecuniary values resting on entirely different grounds.—Conditions to be remembered in discussing the advisability of teaching Industrial Art Drawing in all grades of Public Schools—The immense possibilities of power that lie waiting in the elementary lessons of childhood—What it may mean to teach a child the alphabet—to teach him to draw—to teach him the use of simple mechanical tools—these are the keys to all the past, present, and future, of Human Progress.—Drawing the fundamental basis both of Mechanical Industries and of The Fine Arts—Reference to two papers read before the Departments of The N. E. A. at Buffalo, in July, 1896—Paper on “Art in the School Room through Decoration and Works of Art” by Miss Stella Skinner, Director of Art Education in Public Schools at New Haven, Connecticut—Reference to “List of Art Works for School Decoration,” by Miss Skinner and Miss Webster—Extracts from paper on “Manual Training, etc.,” read at the Buffalo meeting, by Superintendent Carroll, of Worcester, Massachusetts—This paper contains a thoughtful recognition of the two phases of the study which have been already here referred to—Summary of arrangement of Chapters and Appendices in Part II—Why

"Part II" was included in the series of books of this Report—Purpose of present volume as first planned and as modified by the rapid development of the educational movement for Manual Training—Noble purposes of the associated founders of the early Mechanics Institutes, and of the individual citizens who have founded the modern Technological Institutes—Plan of contents of Part IV.—General plan of the Appendices to the several volumes—Typical schools and Institutions recorded—The recent history of the movement is given in Appendix "W." of this volume—Concise summary of general plan of this Report as a Whole—How success of a new movement diminishes immediate interest in the literature which inspired it—Reference to "Uncle Tom's Cabin" in this connection—The Enduring and the Transitory in Literature—Part of Plan of the present Report is to preserve record of the men who advocated the movement for introduction of Industrial Art Training in the public schools of the United States—Men of the present day as active in Educational Benefactions as were the men of a century ago—The far reaching effect of new discoveries in Science, and of the new inventions thereby suggested—How these new needs compel frequent "Readjustment of Vocations"—These facts emphasize the ever growing necessity of general mechanical adaptability—Order of Chapters and Appendices of the present volume "Part III," given; and contents briefly analysed and described.

INDUSTRIAL AND TECHNICAL TRAINING BOTH IN VOLUNTARY ASSOCIATIONS AND IN ENDOWED INSTITUTES (1-728).

CHAPTER I.—MECHANIC INSTITUTES AND SIMILAR ASSOCIATIONS SUPPLEMENTARY TO PUBLIC SCHOOLS, IN SOME AMERICAN CITIES—PRELIMINARY CHAPTER.... 1

The plan of the present Report—Reasons for giving the history of the several Associations from their origin to the present day, with great fullness—The gradual and continuous development of the Public School Systems clearly shown in the account of the corresponding changes which from time to time, have taken place in the purposes and methods of these voluntary Associations—These detailed histories furnish opportunities for interesting comparisons between the several Institutions—The past half century notable, as all pivotal eras have been, for the mobility of all its conditions and institutions—Transition being an essential characteristic of Life; the fuller the life the more active the transition—In such Eras all things are mobile, swayed by the mighty tides of life which mark the great onward movements of the Race—The applications of Science to Industries, in effecting manifold changes in man's environment enforces corresponding changes in his education, to fit him to meet the new conditions—Comments and suggestions of Educators freely quoted in these histories and in the Appendices—Schools of Mechanic Arts and Free Evening Drawing Schools—The preceding volume, "Part II," contrary to the original plan, was mostly given to Public Schools—This change in the arrangement of the Report was necessitated by the rapid progress of the Industrial Education movement in connection with public schools—The Public Schools have for some years, undertaken much which the Institutions recorded in the Chapters immediately following were first established to do—Interaction between private benevolent educational undertakings and public school systems, a feature of American Civic life—The voluntary schools have in most cases evolved into distinctive "Art" Schools, or "Technical" Schools, as the case may be—Some include both departments—The purpose of giving educational advantages to pupils unable to get them elsewhere remains the same with all—The

origin and evolution of each being individual, their history is personal, characteristic and different in each case—The similar Institutions in each city are grouped together in the following Chapters—In all, it is the application of Art to Industry, and the instruction given in Drawing, which leads to their admission in this volume—In this Report the history of the Institution is given in connection with the department which is first mentioned—The Schools of this Class are grouped as follows: The Drawing Classes of the Franklin Institute; of the Spring Garden Institute; and of the St. Mark's Workingmen's Club and Institute; all of Philadelphia, Pennsylvania—The Night Drawing Classes of the Maryland Institute, Baltimore, Maryland—The Night Drawing Classes of the Society of Mechanics and Tradesmen, New York; Schools of The New York Turnverein; and of the Hebrew Technical Institute, all in New York City—The Free Night Schools of Science and Art, Cooper Union, New York City, and the Pratt Institute, of Brooklyn—The Ohio Mechanics' Institute, and the Technical School, both in Cincinnati, Ohio—The Drexel Institute, Philadelphia. The instruction in these Institutions, that is, in the Free Night Drawing Classes, tends naturally to Industry rather than to Art—These Schools are substitutes for, or complementary to, the Free Public Schools.

CHAPTER II.—MECHANICS' INSTITUTES AND SIMILAR ASSOCIATIONS IN THE CITY OF PHILADELPHIA, PENNSYLVANIA..... 7

The Franklin Institute—Origin and History—The Pioneer of its class in the United States—Founded in 1824 by Mr. Samuel V. Merrick, and others—Historical Address by Hon. Frederick Fraley, delivered on February, 6th, 1874—Fiftieth Anniversary of the Institute—Letter written by Mr. Merrick in 1866—His application for membership to a Mechanics' Mutual Improvement Association being rejected; he is prompted by a friend, Wm. H. Kneass, to organize a different Institution—The Andersonian Institute of Glasgow, is, in part, the model of the new Institute—Organization effected at a large public meeting of citizens held February 5th, 1824, and presided over by Mr. James Ronaldson, then the leading type founder of the country—Plan devised by Mr. Merrick, aided by Professor Keating, and a few friends, presented to meeting by Peter A. Brown, Esq., a leading member of the Bar—Plan approved in a letter from Nicholas Biddle, Esq.—Society organized and, at first election of officers February 16th, numbered nearly five hundred members—List of names of first promoters—Professors of Chemistry, Natural Philosophy, Mechanics and Architecture appointed—History and purposes of the Institute summarized in Public Ledger article October 23rd, 1873—Charter and By-Laws amended April 25th, 1864—Analyzed and quoted from—Educational work of the Institute—Mr. Fraley's tribute to the aid given to this association of Mechanics, by Professors of the University of Pennsylvania—Other brilliant Addresses on Fiftieth Anniversary; by Professor Robert E. Rogers, of the University, reciting work of this Institute—by President Henry Morton, of Stevens' Institute of Technology, Hoboken, New Jersey, and by Mr. Coleman Sellers, President of the Franklin Institute—Features of the Institute—The Lectures—The Library—The Collections; of geology, and minerals, and of models of machinery—The Journal—Public Exhibitions—Address of the Board of Managers offering prizes for the Fiftieth Anniversary Exhibition—That exhibition a great success—History of this Memorial Exhibition—List of Committees—Close of the Exhibition—Address by Coleman Sellers, Esq., President of the Institute—A review of the progress of the Arts and Sciences—List of Officers for 1874—International Electrical Exhibition 1884—Origin of the Exhibition—

Site for the building—Classification of Exhibits—Educational influences—Visits of Schools—Lectures—Publication of "Primers of Electricity"—Summary of visitors and of financial results—More than a quarter of a million of visitors—Report of Committee on Bibliography—Special Historical Exhibit made by United States Patent Office—Exhibits made by other Government Departments—Brilliant displays in lighting Building and Grounds—United States Electrical Conference—General Report by Charles H. Banes, Chairman of Committee—List of Officers for 1884—List of members of Committees in connection with the Electrical Exhibition—Account of Annual meeting January 20th, 1885—President Tatham's statement—Annual meeting January 29th, 1887—President Bane's statement regarding the "Novelties Exhibition" of 1885—The Institute Building—Description given in Bulletin of the Electrical Exhibition—Educational Features of the Franklin Institute, their evolution and changes traced—Drawing Schools established in 1824—Reorganization—Plan prepared by Committee—Membership—Number of members at close of 1887, 2,155—Committee on Instruction—Influence exerted by the Franklin Institute during its long career—Its relation to the Capitol at Washington, and to the establishment and development of the Patent Office—List of members having American and European scientific reputation—The Drawing School established the first year of the Institute, and the School of Design for Women founded by it in 1850, entitle this Institute to distinguished mention as a pioneer in Industrial Art Education—It is to be credited also with initiating the movement which culminated in the holding of the Centennial Exhibition in 1876—List of the Presidents, Secretaries and Actuaries of the Institute since 1824—Membership and Financial Statement for 1890—List of Officers and Managers for 1891—The Drawing School of the Franklin Institute—Founded simultaneously with the Institute—Methods modified with progress—At first confined probably to Mechanical drawing—Definite returns obtained in 1874—Four Teachers and two hundred and fifty pupils then in attendance—pupils mostly women and girls—Changes in attendance largely owing to opening of other Art Schools and classes in the city—A running history of the School compiled from the brief notices in the Annual Reports of the Board of Managers of the Institute—Mr. William H. Thorne, appointed Director of the School—Extracts from his Reports from 1882 to 1891—Spring Garden Institute—compared with Cooper Union of New York City—Incorporated April 12th, 1854—Constitution amended 1881—List of original Incorporators—Provisions of membership, Constitution, and By-Laws—This Institute closely resembles the Franklin Institute—Two classes of Schools—The Drawing Schools and the Technical Schools; the latter closely akin to the typical Manual Training School—Historical account of the Institute—Membership—Work—The late Mr. John M. Ogden, was the first president and held that position for thirty years—Account of the work and resources of the Institute from Annual Reports—A new departure taken in 1878—A successful Cooking Class opened in 1880-'81—In 1882-'83 the Mechanical Handiwork Department was greatly developed under direction of Lieut. Robert Crawford, of the U. S. Navy, detailed to that duty by President Arthur—The Drawing and Handiwork Schools were both very largely attended this year, and the Library and Reading room used by many readers—Drawing Schools largely increased the next year—Lieut. Crawford, resigns in 1885-6 to take directorship of the City Manual Training School; and is succeeded by Mr. Arthur L. Church—Report for year ending June 30, 1887, shows continued prosperity—Exhibition of pupil's work May 17th, 1887—List of Officers 1887-'88—Extracts

from Annual Reports from 1888 to 1891, inclusive—List of Officers for 1891-'92—The Night Classes in "Drawing" and in Mechanical "Handiwork"—Drawing Schools opened in 1878—School rooms refurnished in 1880—Three hundred and fifty-eight pupils—A running history of the classes compiled from the Annual Reports—Changes and improvements recorded in 1882-'83 report—Prospectus of Night Classes 1883-'84—Statistics of attendance—Address May 1886, by Superintendent James Mac Alister, on "Art and Mechanical Education"—Abstract from Principal Porter's report of June 30th, 1887—The Night Classes in Mechanical Handiwork—Quickly followed by a Day Manual Training School—The Night Drawing Classes in like manner led to the opening of a Day Art School—Mechanical Handiwork Classes first mentioned in Twenty-ninth Annual Report (1879-'80)—Begun that year—Thirty pupils the second year—one hundred and fifty-eight pupils attend the third year—Programme of studies given in prospectus for 1883-'84—Statistics quoted from Annual Reports of Institute—List of Committee on Mechanical Handiwork for 1887-'88—Day Mechanical School closed in 1891—List of Committee for 1891-'92—St. Mark's Workingmen's Club and Institute—An interesting institution founded in 1870—with Library, Lecture room, Reading room—Musical and Literary entertainments—Free Instruction Classes similar to those of Cooper Union and with Drawing Classes—Appeal for industrial training of working men—List of Officers of Club 1873-'74—Report for 1882-'83—Growth of Club—New Club house—Drawing Classes founded by Mr. H. Dumont Wagner, Secretary of the Pennsylvania Museum and School of Industrial Art, closed by reason of his removal to Chicago—Other classes given up when City opened free public Night Schools—List of Officers 1883-'84.

CHAPTER III.—THE ' MARYLAND INSTITUTE FOR THE PROMOTION OF THE
MECHANIC ARTS, BALTIMORE, MARYLAND 130

Early History—The First Maryland Institute, founded in 1825—After ten years of prosperity an interregnum of twelve years occurred, due to destruction of property by fire—New Institute revived in 1847—Educational work—Night Classes—Day Art Classes begun in 1860—General educational purposes of the first founders—Changes resulting from development of public schools—Historical Summary of First Institute given in address by President Joshua Vansant, in 1851—Founded by John H. B. Latrobe, and others, in emulation of the Franklin Institute in Philadelphia—Extracts from first Constitution and By-Laws—Extracts from Historical Address by Hon. Ferdinand C. Latrobe, ex-Mayor of Baltimore, on occasion of complimentary banquet given March 14th, 1887, by the Managers to Joseph M. Cushing, Esq., President of the Institute—Interesting historical associations recited—Famous Industrial Exhibitions held—Courses of Popular Lectures given in its spacious Hall—Growth of Library—Managers progressive and liberal—Centennial Exhibition stimulated effort in the direction of Art Education, both as applied to Industries and in the Fine Arts—Thirtieth Annual Report (1878) recites new Charter—Powers of the Institute enlarged—Educational Features made prominent—Annual appropriation of \$3,000 made by the State—Changes in Charter and By-Laws noted—Duties of officers defined—New Departure in 1879—Schools reorganized—Professor Woodward, retires; and Professor Hugh Newell, called from Principalship of Pittsburgh School of Design—The Building is remodelled and much improved for use of the schools—Special Report by committee appointed to visit and report on Art Schools in other cities, made by Hon. Carroll Spence, LL. D., chairman, November, 1879—

Extracts from this report—Drawing in Public Schools of Maryland, urged—Proposition to train Teachers for Public Schools in Draughting—Industrial Art Museum suggested—Memorial to Legislature urging Drawing in public schools presented by this Committee in 1880—Advance in ideal of public school drawing due to Centennial—"Sun" article on these two reports—List of officers for 1879-'80—Pamphlet appealing to citizens of Baltimore issued 1880—Extracts from this pamphlet—President James H. Bond, in Thirty-third Annual Report (1881) recites progress—Extracts from this report—President Bond records fact that the municipal authorities have just made an appropriation of \$3,000 designed to be annual, in aid of the schools—Address of Hon. S. Teackle Wallis, at annual commencement of schools, April, 1881—Extracts from this brilliant address—Recites interesting anecdote of Rinehart, the sculptor—Urges additional support by citizens—Shows worth of such instruction to the community—Mr. Wallis urges, also, the establishment of a high class school for mechanical instruction—Attention called to the series of remarkable commencement addresses delivered annually—Extracts from Mr. Skipwith Wilmer's address to the Graduating class of the Commercial School, 1881—Eloquent conclusion—Thirty-fourth annual Report (1882) records with pride the growing development of the Art Schools—Commencement addresses by Hon. Bradley T. Johnson, A. Leo Knott, Esq., and John M. Carter, Esq., an ex-President of the Institute—Mr. Johnson, recites the Art Education given by the State in Belgium, as an example for Maryland—A Parisian Industrial School described—A system of public industrial art education portrayed and plans suggested for its realization by the community—Mr. Knott, closes his address with a rapid sketch of the rise of modern Industrial Art in Continental Europe and in England—Thirty-fifth Annual Report (1883), Mr. Samuel W. Regester, President—The decay of the former exhibitions noted and accounted for—Activities of the Institute transferred to its schools—Commencement addresses (June, 1883), by Charles J. Bonaparte, Esq., and Joseph M. Cushing, Esq.—Mr. Bonaparte, antagonized the public free schools; his arguments stated and commented on—Extracts from his address relating to the schools of the Institute and emphasizing their value to the community—Extracts from Mr. Cushing's admirable business talk to the graduating pupils—Professor Hugh Newell, retires at the close of the year 1883-'84, to practice his Art, and to give more time to his duties in Johns Hopkins University—Success of the schools while under his direction—Professor Otto Fuchs, then Principal of the Massachusetts Normal Art School, the direct successor of Walter Smith in charge of that school, was fortunately secured by the managers of the Institute to succeed Mr. Newell—List of Officials for 1883-'84—President Latrobe's report in Thirty-sixth Annual Report, 1883-'84—Professor Fuchs' first annual report under date of June 3, 1884—A pamphlet illustrated with lithographs of pupils' work—Radical changes introduced in night school—regular courses instituted and regularity of attendance required—Commencement exercises June 3rd, 1884—Address by President D. C. Gilman, of Johns Hopkins University—Copy of address not furnished for publication—Appears as No. 1 of the series of "monographs," issued by New York Industrial Education Association—Hon. Wm. A. Fisher, Judge of Supreme Bench of Baltimore City, delivered the address to the Graduates—Provost Morison, of the Peabody Institute, delivered the Peabody prizes—Thirty-seventh Annual Report by Board of Managers for 1884-'85—Prospectus of Schools for 1885-'86—Improved grading of courses in both Day and Night Schools—Extracts from Second Annual Report by Professor Fuchs, under date

June 2nd, 1885—Modelling in Clay first introduced in the schools during this year—Great improvement noted in night schools ascribed to graded courses of study and to better discipline—Statistics of attendance—Commencement exercises June 2nd, 1885—Address by Hon. J. Morrison Harris—A plea for the intellectual character of the Trades and Industries—Professor M. A. Newell, State Superintendent of Education, addresses the graduating class—The Peabody Premiums distributed—Prominence given in the leading Baltimore Journals to these exercises by printing the lists of graduates and of prize winners—Coöperation of the leading editors with the Institute—Thirty-eighth (1886) Annual Report and accompanying papers—Extracts from Managers' report giving statistics—Third Annual Report of Professor Fuchs—Exhibition of pupils' work—Commencement exercises June 1st, 1886—Address by His Honor Mayor Hodges—A strong plea for Art in Industry—Forcible and interesting address to the graduates of the Commercial School by George R. Skillman, Esq.—Pamphlet account of complimentary Dinner given by the Board of Managers to the President of the Institute, Joseph M. Cushing, Esq., March 14th, 1887—Extracts from the Historical and other addresses delivered on this occasion—Reminiscences of Hon. John H. B. Latrobe, the venerable founder of the Institute, read by his son, Hon. Ferdinand C. Latrobe, ex-President of the Institute, and ex-Mayor of the City—Letter from Mayor Hodges—Report by Professor Fuchs—Remarks by State Superintendent Newell—History of the Founders by John M. Carter, Esq., ex-President of the Institute.—Thirty-ninth Annual Report (1887)—Terms of City appropriation—Gift by Mr. A. S. Abell—Commencement exercises June 7th, 1887—President Cushing's opening address—Extracts from Professor Fuchs' report—Address by ex-Mayor Latrobe—He urges the importance of Technological Schools; refers with pleasure to the one begun in 1885, by the Baltimore and Ohio Railroad Company, under direction of Dr. W. T. Barnard; urges that the city of Baltimore shall promote technical education, and points out how the various Art Industrial Educational institutions in Philadelphia have aided in developing the industries of that city—Fortieth Annual Report (1888)—Continued success of the schools—Increase in number of pupils—Increased appropriation by the State—Annual financial statement—Commencement exercises held in Holliday Street Theatre, June 5th, 1888—Brilliant audience—Opening address by President Cushing—The President recites the increased resources of the Institute arising from appropriations, legacies, and gifts during the past year—Professor Fuchs' annual report as principal of the Art Schools—Address by Col. I. Edwards Clarke—"The Message of Art to modern men"—The work to the Community of the work undertaken by the Institute—Art teaches how labor may be made a delight, urges to simplicity of living as opposed to thoughtless luxury, incites to love of beauty in contrast with mere obedience to whims of fashion, inculcates harmony between the surroundings of nature and the works of man—Illustrations of such harmony in well-known features of Baltimore—Address to the graduates by Professor M. A. Newell—Suggestive anecdote—"Rest and be thankful"—These graduates are but commencing not closing their education in Art—List of officers and members of Board of Managers and of Standing Committees for 1888-'9—Forty-First Annual Report (1889).—Mr. John K. Cowen, delivered address at Commencement, June 4th—His address not reported.—Professor Fuchs, reports prosperity of the schools and additions to models—Forty-Second Annual Report (1890)—Professor Fuchs, urges formation of an Art Library and of a collection of specimens of approved art work for

the use of the pupils—Address by the Mayor, Hon. Robert C. Davidson—Forty-Third Annual Report (1891)—The Board of Managers report greatly increased activities—The beginning of an Art Museum—Report by Special Committee of visits to American Art Schools in Eastern and Western cities—Professor Fuchs, sent to Europe to visit Art and Technical Schools—Report of Committee on Museum—Eloquent address by Hon. John Prentiss Poe—Tribute by Board to three distinguished members of the Institute who died during the summer of 1891—Col. James H. Bond, Hon. John H. B. Latrobe, and Mr. Samuel Sands—List of officers and members of Board of Managers and of standing committees for 1891-'92.

The Night School of Design—History of, in Baltimore American, September 22nd, 1874—Opened in 1848—Professor Samuel Smith, the first Principal—Mr. William Minifie, Principal in 1852-3 and 1853-4, followed by Professor D. A. Woodward—Prospectus of School for session of 1875-6—Summary of statistics from 1875 to 1879—Professor Hugh Newell, put in charge 1879—Rooms rearranged—New furniture and materials procured—The schools so reorganized as to be practically new schools—A graded course arranged—Prospectus of Night School for 1879-'80—The success of the next year's work recorded in the Thirty-third Annual Report of the Board of Managers of the Institute (April, 1881)—Also in those for the two succeeding years—Prospectus for 1883-4—The resignation of Professor Hugh Newell, and the calling of Professor Fuchs, announced—Statistics given in Professor Fuchs' First Annual Report (June 3rd, 1884)—Statistics and comments given in Reports of Board of Managers of the Institute, and in those of the Principal of the Schools, for the years 1884 to 1891 inclusive.

CHAPTER IV.—THE GENERAL SOCIETY OF MECHANICS AND TRADESMEN OF THE CITY OF NEW YORK—FREE EVENING DRAWING SCHOOLS—THE SCHOOL OF THE NEW YORK TURNVEREIN AND ITS DRAWING CLASSES—THE HEBREW TECHNICAL INSTITUTE, NEW YORK CITY 291

This ancient and wealthy Society began as a Mutual Benefit Association in 1785—Incorporated in 1792—Now occupies its own commodious building No. 18 East 16th Street New York City—Is an active educational force with its library and reading room, and with evening classes in Drawing and Modeling—Former distinction between the terms "Tradesmen" and "Mechanics"—Membership limited to these two classes who must also be citizens of the United States—Growth has kept pace with that of the City—First authorized to hold property amounting to \$50,000 now, after successive change of charters, empowered to hold \$1,500,000—Free School recognized by City Authorities in 1841—The Society also authorized to use its funds for support of the "Apprentices Library"—City authorized school to receive pay pupils in 1842—Educational powers enlarged 1856—Officers of the Society chosen annually by ballot—Committees appointed by President—Library in 1883 numbered 65,000 volumes—Elementary English classes dropped in the year 1858; as the City public schools were then well established—Drawing classes substituted—Ninety-Eighth Annual Report (1884) contains Inaugural Address of President John H. Rogers, in reference to the celebration of the Centennial anniversary of the Society the next year—Extracts from this interesting address—Inaugural address of President John H. Waydell, January 5th, 1885—Suggestions in regard to the work of the school committee—Proposes a practical elementary trade school—Announces that the Centennial celebration occurs on November 17th, 1885—The Centennial celebration—Extracts from the official account issued in a pamphlet by the Society—First evening, a Banquet with ladies attending,

at Delmonicos—Second evening, a meeting at Steinway Hall with an Address by Hon. Stewart L. Woodford—Address by Chief Justice Daly, who presided at the Banquet—William Wood, founded in Boston early in 1820, “the first ‘Apprentice’s Library’ in this, or any other country”—Mr. Wood, aided by the members of the society, succeeded in opening a similar library in New York City, May 25th, 1820—The several migrations of the Society and Library from City Hall Park, up town; as the city and the society grew, recited—It abode for forty years in its own building in Crosby Street till, in 1877, it secured and occupied its present commodious building at East 16th Street—Course of Lectures established in 1835, and continued every winter since—Working mechanics and working women first admitted to the privileges of the Library, when the new home of the society was occupied in 1877—Response by Hon. Joseph Hawley, Senator of the U. S. from Connecticut—to the toast “The United States”—The Country by four years the junior of this society—This Society anticipated George Washington in seeking to promote American industries by protection.—“A patriotic aspiration” ninety-eight years ago!—The speaker prophesies that some of those present will live to see a population of 120 millions in the United States—Ex. Governor Hoffman, responds for “the State of New York”—This society teaches the lessons of the dignity and the rights of Labor—Anecdote of the late Mr. Joseph Harrison, of Philadelphia, who began life as a blacksmith—The Picture illustrating the Rabbinical Legend of “The Blacksmith and King Solomon”—Hon. Chauncey M. Depew, responds for “The City of New York”—“The history of your Society is the history of the City”—for the charities and the free schools of New York “are the safeguards of liberty and civilization in this metropolis of ours”—Recital of the fact that the associations for charity, the free schools, and the public library, were all initiated by this Society—Mr. Depew, thus credits it with having been a potent force in the best development of the city—The Rev. Robert Collyer, responds for “The Mechanic Arts”—Anecdote of the old shipmaster and Napoleon—Mechanics who come from the old countries to New York “have the chance to be twice the men they could be in the old world”—General Horace Porter, recalls, in his remarks, the fact that this society sent to the field in defence of their country the first regiment of New York Engineers; which, for efficiency and distinction, had no superior in the service—Hon. Abram S. Hewett, in his remarks, states that his father was a member of this society and that he himself, then a boy of eleven years, drew his first book from a public library from the Apprentices Library when it was first opened in Crosby Street—He also refers to the fact that the name of John Campbell, the grandfather of Peter Cooper, appears among those of the first incorporators of this society—From the workings of this society, Peter Cooper got the first idea of creating the institution which bears his name—It was his first intention to make this society his almoner—The limitation to Apprentices however deterred him, as he wished to give opportunities for education to all, instead of only to a limited class—Mr. White-law Reid, editor of the New York Tribune, responds for the Press—“The Editors real business is to keep things out of the newspapers”—What the Community want to know and what the Community thinks—The newspaper that gives these succeeds; all others fail—“The newspaper obeys the majority”—The statesmen addressing you to-night have adroitly avoided any reference to the conflicts between Labor and Capital—This Society, by its pride in its origin, sets an example to all, that the two classes are still reciprocal—From laborer to employer is still, in America, a short step—Co-operation is better than conflict—Arbitration better than antagonism—

Judge John A. Brady's brilliant response to the toast of "Women" closed the speeches—The building thrown open to the public the next day—The meeting at Steinway Hall opened with a few words of welcome by President John H. Waydell—The main object of the society was to relieve the unfortunate and to educate and elevate the workers—General Woodford's address was extempore and inadequately reported—Brilliant contrasts drawn between the conditions surrounding the first, and this, the one hundredth, meeting of the society—Examples of the Century's growth in humanity, civilization and christianity pointed out—Organized labor must cease to deny to the young, opportunity of learning trades; or to the non union man, the right to work—Must cease to be tyrannical—Only when it learns to be just, will combined labor win true liberty—Historical sketch of the Society—prepared by the Secretary Mr. Stephen M. Wright, and appended to the Report of the Centennial commemoration—Interesting extracts from this sketch follow—The history of the School—Mordecai M. Noah, Esq., the distinguished editor, gave the Inaugural Address at the opening of the New Building in Chambers Street in 1821—The school, opened in 1820, was closed in 1858 as no longer needed—A free evening school begun by a member in 1822 was formally adopted by the society in 1859 and still continues as a drawing school—The Library opened in 1820—Open only in the evening till 1854, when a regular librarian was appointed; since when it is kept open from 8 A. M. to 9 P. M.—A public reading room opened 1856, free to all—Special additions to the Library, from time to time recorded—The Lectures began January 1837—Professor Renwick, delivered the first lecture of the course, his lecture was on Natural Philosophy—The several removals of the society recorded—Patriotic celebration of the Fourth of July always a feature—Stand of colors given early in the War of the Rebellion to First N. Y. Volunteer Engineer Regiment, composed exclusively of Mechanics (Col. Serrell commanding).—In April, 1865, the Society issued an address of thanks to the Army and Navy of the U. S. for their services in preserving the Union—Description of the present building—List of the Committees in charge of the Centennial celebration—The One Hundredth Annual Report, December 31st, 1885—Summary of the various charters—Report for 1886—Report for 1887 contains inaugural address of President Wm. C. Smith, delivered January 10, 1888—Suggests need of increased powers and funds to meet the ever growing demands—Inaugural Addresses by Presidents Bogert, and Barratt, 1890 and 1891—List of officers for 1891—The Free Evening Drawing Schools—Drawing and Book keeping substituted for elementary English studies in winter of 1858-9—Book keeping classes discontinued 1880—An Evening Drawing Class for girls, opened 1874—Article X of By-Laws of the Society which relates to evening classes quoted—Report of School Committee for 1882—About 200 men and boys, and fifty girls, in attendance in 1883—List of School Committee 1883-4—Sessions held four evenings a week from October to March inclusive—Report of School Committee for 1883—Report for 1884—Statistics of expenses—Modeling in clay introduced—Influence of contemporary movement for general industrial education begins to appear in report for 1885—Success of modeling class—Women's drawing class abandoned in 1886—Classes for girls in type writing and phonography, take the place of the drawing class—Report for 1886—Male pupils number 300—38 young women who graduated in phonography and typewriting soon found employment—Report for year ending December 31st 1887—Statistics of expenses—205 male pupils—89 girls in the type writing and phonographic classes—The speedy opening of the J. Morgan Slade Architectural Library promised—The technical industrial

movement gains such headway that, in the spring of 1888, the abolition of instruction in free hand drawing is seriously proposed—Finally one of the two classes in "Free Hand" is retained—The establishment of a series of Trade Schools for practical instruction in special industries seems to be foreshadowed—As public schools and Art Schools multiply, and the general introduction of more or less of industrial training in all schools prevails, the specialization of the education given by the classes of this Society becomes more feasible and, perhaps, desirable—Condition of school from 1888 to 1892—List of School Committee for 1891—The School of the New York Turnverein—Drawing Classes—The School originally founded to teach Gymnastics and German, in 1852—Statistics of attendance in 1882 and in 1883—Children of all nationalities admitted—Large collection of Casts—Elementary Drawing taught to younger children—Cast and Free hand Drawing to older pupils—A Modelling Class—The Hebrew Technical Institute, New York City—The Hebrew Industrial School in Philadelphia, referred to—History of the New York School furnished by Dr. Leipziger, the Principal—This school for the technical instruction of boys was formed by members of Hebrew benevolent societies. Opening in East Broadway in 1884, it soon outgrew its quarters and removed to larger rooms in Crosby Street—A public meeting in aid of the School held in April, 1886—Addresses by Hon. Carl Schurz, Rev. Dr. Gothiel, Dr. Moses, Jesse Seligman, Esq., and Dr. H. M. Leipziger—A Society for the support of the School then formed—The School, on February 1st, 1887, took possession of its permanent home, the premises Nos. 34 & 36 Stuyvesant Street, which had been procured by the Society—Letter from Dr. Leipziger, principal—Courses of instruction and schedule of studies—Circular—List of Officers of the Association and of Instructors in the School.

CHAPTER V.—THE COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART—NEW YORK CITY—THE FREE NIGHT SCHOOLS OF SCIENCE AND ART—THE PRATT INSTITUTE, BROOKLYN, NEW YORK—THE DREXEL INSTITUTE, PHILADELPHIA, PENNSYLVANIA.....	348
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This Institution founded by one man, Peter Cooper, of New York—The death of Mr. Cooper, in 1883, an occasion of general acknowledgment of his great services to the Community—His character in many ways resembled that of Benjamin Franklin—Memorial Resolutions passed by The Union League Club—Mr. Cooper, celebrates his Eightieth birthday, February 12th, 1871, by an additional gift of \$100,000 to Cooper Union—Interesting recognition of this by the graduating class at the Commencement exercises of that year—Reception given to Mr. Cooper, on his Eighty-Fourth Birthday, by The Arcadian Club of New York City—List of officers of the Club and of the Reception Committee—This brilliant event, participated in by leading representative citizens in every walk in life, was commemorated in a privately printed pamphlet from which the account here given is compiled—Auto-biographical statements by Mr. Cooper, in his response to the welcoming addresses by Algernon S. Sullivan, Esq., Chairman of the committee of arrangement, and Hon. Henry G. Stebbins, President of the Club—Columbia College, Cornell University, and Princeton College, represented by their Presidents, who each made brief addresses—The City School system represented by The President and members of the Board of Education—Addresses by Wm. Cullen Bryant, Chief Justice Daly, Judge Woodruff, and others—Extracts from addresses by President Andrew D. White, of Cornell, and by Rev. Dr. Deems, of the City—Letters from President's Porter, of Yale, and Elliot, of Harvard—Extracts from articles in The Evening

Mail and in the New York Times—Mr. Cooper's ardent patriotism—shown during the War, and ever since, in his written plans for the direction of the Union—His comprehensive and far reaching plan in founding the Union, as embodied in the Charter—He creates a Board of six Trustees—The oldest lineal descendant of Peter Cooper, shall always be a member of this Board, "ex gratia"—Recital of the provisions of the Charter—Letter from Mr. Cooper, accompanying the Trust Deed—His expression of faith in the informing ideas of the American Republic—The fact that the pupils are to be citizens of the Republic, is never to be lost sight of—The purpose and object of the opportunities here given is to make them better citizens—His high ideal of Character—His broad and lofty views contrasted with the narrow views of education held by some—The corner stone laid in 1854—The Deed of Trust executed and the building formally transferred to the Trustees, April 29th, 1859—Mr. Cooper's statement of the causes that led to the conception of his plan given in his address to the graduates, which is quoted in the 15th Annual Report—First Annual Report (Jan. 1st, 1860)—About two thousand pupils admitted to the schools—The study of Industrial Art drawing made fundamental—The Woman's School of Art adopted as a department of the Cooper Union, and the "Lady Managers" of that school, enrolled as an "Advisory Council"—The Bryan Gallery of Old Masters, with other loan pictures exhibited as a Free Art Gallery in the rooms of the Institute—Advanced views of the Trustees as expressed in their first report—The coöperation of other benevolent citizens invited—List of Board of Trustees and of Instructors for 1859-'60—Fifth Annual Report—Incident at Commencement 1864, when the members of the first graduating class were each personally presented to Mr. Cooper—Tenth Annual Report—Eighteenth Annual Report—The Library opened, for the first time on Sunday, October 6th, 1872—The Nineteenth Annual Report 1878—The work of the Union reviewed by Trustees, Curator, and Instructors—22d Annual Report (1881)—Two stories added to the Building—Additional gift of \$10,000 by Mr. Cooper to the "Golden Wedding Fund"—The addition to the building cost \$70,000—This was paid by Mr. Cooper, and a gift of \$30,000 added to the general fund—Pressure on the Schools for admission—Only the Community by public action can meet the educational needs of the People—The Seal of the Corporation described—Extracts from By-Laws—The Free Night Schools of Science and of Art—The Free Reading Room, The Lectures, and the Women's Day School of Art, are all opened to the public by the Trustees of Cooper Union—24th Annual Report (1883) includes a succinct history of the institution—For twenty-four years there was no death among the members of the Board of Trustees—Mr. Cooper, in venerable old age, was the first to die—Curator's report in 24th Annual Report—Statistics of attendance, etc.,—Officers for 1883—The Twenty-Fifth Annual Report—Summary of statistics of attendance on the several schools—A free class for Women in Phonography and Typewriting opened—This precedent followed by The New York Society of Mechanics and Tradesmen in 1886—The School of Telegraphy—No more Annual Reports printed till May 28, 1887—Summary of financial statements for the three successive years—Statement of the Trustees—Enormous expense incurred by the necessity of strengthening and practically rebuilding the foundations of the building—Cost met by the children of Mr. Cooper—Trustees appeal to public to increase endowment Fund—Summary of students attending 1886-7—Statement by Curator of number of applicants refused for want of room, showing how great is the pressure upon the facilities of the Union—The free lectures resumed in the autumn of 1886—The Twenty-Ninth Annual Report, May 26th, 1888—List of officers and trustees 1888.—The Free Night Schools of Science and

Art—Mr. Cooper's statement of the origin of his purpose and plan—Description of the Building—Statement of the work of the Cooper Union for the first twenty years, by the Curator, in the 19th Annual Report 1878—The report of the school for 1877, by Director Tisdale—Extracts from Reports of Director of the School, with programmes of studies and statistics of attendance, from 1879 to 1888, inclusive.

The Pratt Institute, Brooklyn, New York—Incorporated 1887—opened in Autumn of 1887—Purpose set forth in Act of Incorporation—The gift to the community by one man, Charles Pratt, Esq.,—Letter from Mr. Pratt, reciting the origin of his purpose—He refers to the example of Peter Cooper, George Peabody, and others, as inciting him to do likewise—The Act of Incorporation—Likeness and differences between this new Institute and Cooper Union—Great similarity of purpose in the main—The buildings—The machine shops for Manual Training—The Free Circulating Library and Reading Room for the public—The Art Department in charge of Mr. Perry, formerly supervisor of drawing in Public Schools of Worcester, Massachusetts—Possibility and desirability of further artistic development—The Technical Museum—The Trade Schools—Cooking Schools—Schools open to pupils of both sexes—Mr. William Sartain, the artist, quoted—Thirty teachers already employed—over a thousand pupils in attendance in the Autumn of 1888—The description of the buildings, equipment and departments, compiled from the official publications in pamphlet form and in the *Scientific American* of October 6th, 1888—Resources—The "Astral" Apartments, the rent to be given to the Institute—The buildings of the Institute are on a grand scale and all the appliances are of the best, and provided in the most liberal way—Every facility furnished to render the equipment of each department complete—Large play grounds attached to the buildings—A noble addition to the educational resources of this country—Worthy to rank with the foundations given by Cooper, and by Girard, and abreast of the latest educational movements.

Letter from Mr. Perry, Director Art Department, dated December, 1891, refers to the recent death of Mr. Charles Pratt—Address by the founder, Mr. Charles Pratt, detailing the development of the Institute up to that time, delivered October 2, 1890—Summary of events by the Secretary—Rapid increase of attendance—Library opened to the general public, with large circulation—Address by Mr. Charles M. Pratt, President of the Board of Trustees, delivered on Founder's Day, October 2nd, 1891—Presentation address by Mr. Perry, for the pupils, in presenting bronze bust of Mr. Charles Pratt, to the Institute—Secretary's Report for 1890-'1—Official statement of Art Department for 1891-'2—Programme of courses of Study in the various Departments of the Institute—Library—Technical Museum—The Thrift—New Department of Agriculture—Alliance with Prang Educational Company for promotion of art industrial knowledge throughout the United States—List of Officials and Instructors 1890-'1.

Drexel Institute of Art, Science, and Industry, Philadelphia, Pennsylvania—Founded by Anthony J. Drexel, Esq.—James MacAlister, LL. D., appointed President in 1890—The Opening Ceremonies attending the presentation of the deeds of gift to the Trustees, December 17, 1891, as reported in the *Philadelphia Ledger*, *New York Tribune*, and other leading journals—A distinguished representative audience—Prayer by Bishop Potter—Dedictory address by Hon. Chauncey M. Depew, LL. D.—Address by Hon. Wayne MacVeagh, Ex-Attorney-General of the United States, speaking for Mr. Drexel, and formally delivering the deeds—Address by President MacAlister, in response for the Trustees—Benediction by Bishop Whitaker—The Preliminary Circular forecasting the educational plans of the Institute—A

visit to the Institute in June, 1892—Departments already opened—The Building—The Library—Interesting collection of MSS. presented by Mr. George W. Childs—The Museum—Valuable collections already secured—Touching memorial art collection to Mrs. Drexel, begun by Mrs. Paul, in memory of her mother—List of Officials 1891-'92.

CHAPTER VI.—THE OHIO MECHANICS INSTITUTE, CINCINNATI, OHIO..... 611

The movement for organizing The Institute suggested by John D. Craig, at the close of his lecture course on Natural Philosophy, in 1828—The School of Design added to the other Departments of the Institute in 1856—Historical sketch of The Institute published in 1853—Meetings for considering the plan of such an Institute, held in autumn and winter of 1828-'29—Names of the first promoters of the movement—Extract from charter granted by the Ohio Legislature, February 9th, 1829—Fiftieth Anniversary—Anniversary History of the Institute—Corner stone of the Building laid July 4th, 1848—Names of original Trustees—Miles A. Greenwood, Marston Allen, and John P. Foote, chosen in 1856 and 1857, as a Board of Emeritus Trustees in recognition of their distinguished services to the Institute. The Library and Reading Room of the Institute, in combination with the Common School Library and under the direction of the City School Board, became the nucleus of The Free Public Library of the City.—

The Public Exhibitions held under the auspices of the Institute, have become a feature of the City—These Exhibitions were suspended during the war—A "Department of Industrial Improvements" to test new inventions, organized in 1878, superseded by the "Department of Science and Art," organized in 1880; which, also, had charge of the Annual Volume of "Reports of Proceedings"—Volume I. issued January 1882—This movement followed by important increase in membership—Permanence of official positions; only four Presidents in sixty years—Historical Sketch of the Institute, furnished in 1880 for this Report, by Mr. George Graham, then the only survivor of the original Charter Members—Brief summary of Expositions held from 1838 to 1888—Report of the great Exposition held in 1888—In its activities The Ohio Mechanics Institute resembles the Franklin Institute of Philadelphia—Courses of popular lectures discontinued in 1885—The Report of 1886—Extracts from The Cincinnati Commercial Gazette showing the educational work of the Institute schools—Tribute to the late Miles Greenwood—Resolutions by the Directors concerning the resignation of his position by Mr. John B. Heich, who for 31 years was assistant Secretary of the Institute and Superintendent of the Schools—Sixtieth annual Report 1888—Sixty-Second Annual Report 1890—Tribute to Thomas Gilpin, President of the Institute for nearly eighteen consecutive years, who died October 26th, 1889—Sixty-third Annual Report 1891—President Allison's report in full—Financial statement for year ending April 1st, 1891—List of Officers and Committees for 1890-'91.—

The School of Design—Evening Drawing classes first opened in 1856, John Heich, Principal—Statement by Mr. Heich, in letter of May 1882—Drawing recognized in the first report by the Principal as of prime importance—Mr. Heich, quotes largely in his report from Mr. Minifie, at that time the accomplished principal of the Maryland Institute Schools in Baltimore—Mr. Heich, shows in his report the relations borne by trained skill to the manufactures of a country, the practical value of a knowledge of drawing and designing—Report of diminished attendance in 1861-'62, owing to numerous enlistments in the Armies of the Union—Two years later attendance again increased rapidly—Decrease in attendance in year 1870, attributed

to opening of the school of the McMicken University, and to the introduction of Drawing in Public Schools of the City—Both induced indirectly by the example of this school—The school flourishing at the time of the 50th anniversary of the Institute—Its organization and courses of instruction detailed—The school prospectus quoted in Directors Report 1879—Increased attendance in 1879-'80—The results obtained by Industrial Drawing classes should lead directly to establishing of Technological Schools for training in artistic instructions—How the introduction of elementary drawing in public schools enables voluntary institutions to enter upon higher training is shown in Fifty-Fourth Annual Report, 1882—Report of Principal, 1882—Programme of studies, rules and regulations of school.

The School of Technology—The Fifty-Fifth Annual Report (1883) records the changes in the school now to be known as The School of Technology—Report of special committee of Directors on Technological Education, with Reports of Committees of Board of Trade—The Great Industrial Expositions have been held since 1870, under direction of a Board of Commissioners; which includes representatives from "The Chamber of Commerce," "The Board of Trade," and "The Ohio Mechanics Institute"—Attendance on the new School of Technology, 1882, 364—Report for 1883 shows increase to 428—Extracts from succeeding report by Principal Heich. Principal Heich's final Report for the year 1886-1887—First report for 1887-1888 by Mr. R. E. Champion, the successor of Principal Heich, showing changes in courses of study—Extracts from subsequent reports by Mr. Champion—Report for 1890-'91—Extracts from Mr. Champion's letter of December 11th, 1891.—

CHAPTER VII.—THE CINCINNATI TECHNICAL SCHOOL, CINCINNATI, OHIO— EVENING DRAWING CLASSES IN THE CITIES OF CHICAGO, ILLINOIS; COLUMBUS, OHIO; AND ERIE, PENNSYLVANIA	683
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The Technical School of Cincinnati—Suggestions that the former movement by the Board of Directors of the Ohio Mechanics Institute, in favor of Technological Training and Manual Training, prepared the public to give support to this new school—Incorporated July 27th, 1886—Letter from Superintendent Carothers, on the use of the name "Technical"—Historical sketch from First Annual Report—Committee of the Order of Cincinnati, reports in favor of incorporating this School—First Board of Directors elected October, 25th, 1886—List of Board—School opened with only three pupils; attendance only eighteen, at end of first year—Pamphlet containing addresses delivered at the closing exercises of the first year of the School—Extracts from address by Hon. John Tehrenbach—The need and utility of definite technical knowledge briefly illustrated—Address by Professor Thomas Norton—Striking analysis of public school attendance in Cincinnati, showing that only fourteen out of every thousand children who enter the lowest primary schools, ever complete the high school course—That is, only fourteen out of every thousand school children in Cincinnati, continue to attend school for twelve consecutive years—Extracts from Professor French's address on the relation of Manual Training to Mental Training—Extract from address by Ex Superintendent of City Schools, Dr. John B. Peaslee—The importance and value of a Technical School—Sixty-four pupils reported in attendance during second year—Commercial Club of Cincinnati, formally endorse the school; in November, 1887—Individual members had, before, freely contributed to its support—Extracts from prospectus of school published 1886-87—First Annual Catalogue issued February 1888—Details of conditions of admission and programme of courses of study—Proposed

Department of Domestic Science described—Equipment of wood-working shops—Theory of shop instruction stated—General plan of school—The new forms of training and their educational value, discussed at length by Mr. George R. Carothers, Superintendent of the School. Addresses at closing exercises of second year, June 13th, 1888—Extracts from address by Colonel William L. Robinson, President Board of Directors—Address by Superintendent George R. Carothers—Interesting history of the early struggles of the School—Quotes Emerson on Self-Reliance—Claims four pre-eminent advantages for Hand Training—Arguments of opponents of Manual Training considered—Value of physical training for girls, as well as boys—Address by Rev. George A. Thayer—The School at Toledo, commended—The importance of Industrial Art Training to the Country, emphasized—The value to the inventor, or working mechanic, of this ability to develop his ideas and plan in drawings—The plan grows and is perfected just as the author's rough draft is likewise polished and developed—He refers to the master of the art of wood-carving, Mr. Fry, whose exquisite works have given fame to Cincinnati—The rooms of the school in Music Hall were occupied with exhibits during the "Centennial Exposition," 1888, and the school was opened temporarily in one of the district school buildings—Mr. Carothers, resigned in July, 1888—Mr. L. R. Klemm, Ph.D., appointed Principal of the School in August 1888—The Commercial Club raised a large fund for the school—Fifty thousand dollars ultimately contributed—A new Board of Directors chosen—Report of the Principal, December 1st, 1888—Details of attendance and of studies—List of Instructors—Board of Trustees' report for 1889-'90—Professor L. R. Klemm resigning, Mr. James B. Stanwood, was appointed Director—The Catalogues for two following years show increasing number of students—Number for the year 1891-'92 is 152—Equipment of shops largely increased—Sketch of a boys' school life in the Technical School—List of Trustees and Faculty—Free Evening Drawing Classes in other Cities—Evening High School, Chicago, Illinois—Illustrates a group of schools, in other cities and towns, similar to the Free Evening Drawing Schools established by law in the larger towns and cities of Massachusetts—Opened by Chicago Board of Education in 1874, for free instruction in Mechanics and Mechanical Drawing—Open five evenings each week—Thirty-eight pupils attended the first session—Professor H. H. Belfield, Director of the Chicago Manual Training School, formerly in charge of the Evening High School, furnishes historical data—No drawing taught in evening schools of Chicago till 1868—Introduced by Dr. Selim A. Peabody, present Regent of Illinois Industrial University—(1884)—The great Chicago Fire of 1871, ended these evening schools—The Evening High School reopened in 1874, still in charge of Dr. Peabody—Mr. Brownell, succeeded Dr. Peabody, in October, 1878, and Mr. Henry H. Belfield, assumed charge in October, 1881—Mr. Oliver H. Westcott, succeeded in October, 1883—The school of value to the pupils—Supported by direct appropriation of the City Council—Two late presidents of the School Board, for some unknown reason, wish the discontinuance of the school—Free Evening Industrial Drawing School, Columbus, Ohio, opened November, 1874, by Board of Education—Drawing put in day schools same year—Seventy five pupils attended evening schools; twenty-five were ladies—Extracts from Annual Report, by City Superintendent R. W. Stevenson, for 1874-75—Professor W. G. Goodnough, Superintendent of Art Education in City Schools, was appointed teacher—Details of course of studies—Statistics of pupils occupations—The school commended—Extracts from Professor Goodnough's Report as Master—Want of suitable accommodations—Pupils work exhibited at end of season—Attracted much interest—Second year—One hundred

and seven pupils, in all; thirty eight women—The Board of Education opened no evening schools during the winter of 1876-77—Columbus Art Association opened in autumn of 1878—An Art School opened by this Association, January, 1879—An evening drawing class, with a tuition charge of ten cents per night, opened—This, with the fact that drawing had been put in all the public schools, led to the final abandonment of the City evening drawing School—Free Evening Drawing School, Erie, Pennsylvania, organized by city School Board, in October, 1873—Mr. H. E. Luding, in charge—Eighty two pupils attended, only two of whom were women—Exhibition of Scholars' work, held in 1875—Superseded by the Board in 1884, by opening the day and evening Mechanical Drawing School—Superintendent Jones, of Erie, reported in 1889, the success of this school, and its practical operation; Mr. George Zwilling, in charge as Principal.

	Page.
APPENDICES.....	729-1119
GENERAL INTRODUCTION.....	731
R.—NEED OF TECHNICAL EDUCATION IN THE UNITED STATES RECOGNIZED.....	731-741
I. Introduction.....	735
II. "Technical Education;" Address before State Teachers Association of Pennsylvania, in 1874, by George Woods, LL. D.....	735
S.—PAPERS RELATING TO THE PRESENT NEED FOR ELEMENTARY EDUCATIONAL TRAINING IN THE INDUSTRIAL ARTS.....	743-771
I.—Introduction.....	745
II.—The Readjustment of Vocations, by William T. Harris, LL. D....	746
III.—The Manual Element in Education, by John D. Runkle, LL. D....	748
IV.—The Apprenticeship of the Future, by Professor Sylvanus G. Thompson, of England.....	751
V.—The Higher Education of Mechanics for their Trades, by Louis J. Hinton.....	761
VI.—Technical Museums.....	765
VII.—Additions from India to collections of South Kensington Museum.	766
VIII.—Local Industrial Art Museums in Great Britain.....	767
IX.—Englands debt to Sir Henry Cole.....	770
T.—PAPERS RELATING TO ELEMENTARY TECHNICAL TRAINING.....	773-791
I.—Introduction.....	774
II.—(a) Manual Element in Education, by Professor John D. Runkle, LL. D.....	776
(b) The Imperial Technical School in Moscow.....	778
(c) The Royal Mechanic Art School in Komotau, Bohemia.....	781
III.—European Technical and Industrial Schools, by Professor John D. Runkle, LL. D.....	783
IV.—Industrial Design as applied to Manufactures, by Mr. Charles Kastner, Director of the Lowell School of Design, Massachusetts Institute of Technology.....	790
U.—PAPERS RELATING TO EUROPEAN ARTISAN AND INDUSTRIAL ART SCHOOLS.....	793-820
I.—Introduction.....	795
II.—The Artisans School, Rotterdam, Holland.....	796
III.—Some European Industrial Art Schools, by Charles M. Carter, of the Massachusetts Normal Art School.....	799

	Page.
V.—PAPERS RELATING TO THE VIENNA UNIVERSAL EXPOSITION OF 1873.....	821-901
I.—Introduction	823
II.—Extracts from Official Reports by the English Commissioners..	825
III.—Extracts from the Official Reports by the Commissioners sent by the State of Massachusetts.....	835
IV.—Extracts from the Austrian Official Reports.....	857
W.—PAPERS MISCELLANEOUS AND SUPPLEMENTARY; WITH ACCOUNTS OF SOME NEW EDUCATIONAL INSTITUTIONS FOR INDUSTRIAL AND TECHNICAL TRAINING IN THE UNITED STATES.....	903-1119
I.—Introduction	905
II.—The Armour Institute, Chicago, Illinois	907
III.—The Jacob Tome Institute, Port Deposit, Maryland.....	933
IV.—The Industrial Education Movement in the Schools of California.	957
(a) Manual Training. An Address by President Keyes.....	958
(b) Synopsis of Report by Committee on Manual Training.....	965
V.—The Throop Polytechnic Institute, Pasadena, California.....	969
VI.—The California School of Mechanic Arts, San Francisco, California	989
VII.—The Thomas S. Clarkson Memorial School, Potsdam, New York.	999
VIII.—Young Men's Christian Associations of North America; Educational Department; Class Work in Industrial Drawing and Elementary Technical Training.....	1013
IX.—The Brooklyn Exhibition of Works of Art Suitable for Decorating School Rooms.....	1053
X.—Two recent Statistical Papers by Hon. W. T. Harris, LL. D., U. S. Commissioner of Education.....	1061
(a) "What the South is doing in Education, and What Education is doing for the South".....	1064
(b) "The Statistical Data to settle our Great Economic Questions"	1067
XI.—Manual Training: Recent Progress of, in the United States. 1073-1106	
(a) The Berkeley School Exhibit, New York City	1074
(b) Teachers College and Schools, New York City	1075
(c) The Horace Mann School.....	1079
(d) The Macy Manual Training High School.....	1086
(e) Conference on Manual Training in 1895	1092
(f) Latest Statistics in Report by U. S. Commissioner of Education for 1893-94.....	1106
XII.—Examples of Industrial Art Training in several countries of Europe	1107-1119
(a) "European Industrial Art Schools in 1896," by L. W. Miller, Principal of School of Industrial Art of the Pennsylvania Museum	1107
(b) "Industrial Training for Girls in some Public Schools in Europe," by Jessie Patterson.....	1116

INTRODUCTION.

PURPOSE AND PLAN OF PRESENT VOLUME.

xxi

INTRODUCTION.

PURPOSE AND PLAN OF PRESENT VOLUME.

The present volume largely given to the history of the Mechanics Institutes and similar Associations in the cities of the United States—Accounts of several modern Institutes founded by individual citizens are also included—Plan of this volume described as modelled after the two preceding volumes of this Report—Concise statement concerning the volumes which are to compose the completed Report—Resolution approving Part II. passed by National Educational Association, in 1892—Reference to certain statements in Part II.—Summary of plan and contents of the two preceding volumes—Sketch of the rapid development of the Manual Training movement in the United States—How this movement affected the preparation and issue of the volumes of this Report—Symptoms of an educational reaction from mere mechanical training to artistic development—All educational subjects must, in time, find their just relative place in any intelligent scheme of education—The claim of a place for Aesthetics as rational as that urged for Mechanics—The Industrial Art Training Ideal comprehends both features—The claims of High Art recognized and provided for in their completed plans, by the founders of the New Educational Methods begun in Boston, in 1870—Walter Smith, a professional Sculptor, as well as Art Master—Elementary Drawing in all the grades of the Public Schools designed to lead on to the Professional Art Schools; just as the Public High Schools prepare for the Colleges and Universities—Reference to the late Mr. Charles C. Perkins, as one of the founders of the Museum of Art, in Boston, Massachusetts.—Confusion in the discussion of the question of the value of different methods and subjects of education, arises from lack of differentiation between the educational and the economical features;—the pedagogic and pecuniary values resting on entirely different grounds.—Conditions to be remembered in discussing the advisability of teaching Industrial Art Drawing in all grades of Public Schools—The immense possibilities of power that lie waiting in the elementary lessons of

childhood—What it may mean to teach a child the alphabet—to teach him to draw—to teach him the use of simple mechanical tools—These are the keys to all the past, present, and future, of Human Progress.—Drawing the fundamental basis both of Mechanical Industries and of The Fine Arts—Reference to two papers read before the Departments of The N. E. A. at Buffalo, in July, 1896—Paper on “Art in the School Room through Decoration and Works of Art” by Miss Stella Skinner, Director of Art Education in Public Schools at New Haven, Connecticut—Reference to “List of Art Works for School Decoration,” by Miss Skinner and Miss Webster—Extracts from paper on “Manual Training, etc.,” read at the Buffalo meeting, by Superintendent Carroll, of Worcester, Massachusetts—This paper contains a thoughtful recognition of the two phases of the study which have been already here referred to—Summary of arrangement of Chapters and Appendices in Part II—Why “Part II” was included in the series of books of this Report—Purpose of present volume as first planned and as modified by the rapid development of the educational movement for Manual Training—Noble purposes of the associated founders of the early Mechanics Institutes, and of the individual citizens who have founded the modern Technological Institutes—Plan of contents of Part IV.—General plan of the Appendices to the several volumes—Typical schools and Institutions recorded—The recent history of the movement is given in Appendix “W.” of this volume—Concise summary of general plan of this Report as a Whole—How success of a new movement diminishes immediate interest in the literature which inspired it—Reference to “Uncle Tom’s Cabin” in this connection—The Enduring and the Transitory in Literature—Part of Plan of the present Report is to preserve record of the men who advocated the movement for introduction of Industrial Art Training in the public schools of the United States—Men of the present day as active in Educational Benefactions as were the men of a century ago—The far reaching effects of new discoveries in Science, and of the new inventions thereby suggested—How these new needs compel frequent “Readjustment of Vocations”—These facts emphasize the ever growing necessity of general mechanical adaptability—Order of Chapters and Appendices of the present volume “Part III,” given; and contents briefly analysed and described.

The present volume, the third in the series of volumes comprised in the Special Report on “American Education in Fine and Industrial Art,” is largely given to the historical accounts of the origin and development of the Institutions from time to time founded in American cities, and towns, in several instances early in the present century, by associations of mechanics and others, combining for mutual improvement by means of circulating libraries, courses of lectures, etc.; and, also, by the provision of evening classes for giving elementary instruction in English studies to Apprentices, and to others unable to attend day schools.

In addition to the accounts of these earlier societies and their

schools, descriptions of some of the most recent of the modern Institutes founded by individual philanthropists, and amply furnished with all requisite facilities for scientific and technical training in the Industrial Arts, are included in the histories herein contained.

This volume follows in its general plan, and in the Appendices, the model set by the two volumes of the "Art and Industry Report" which precede it. In the opening chapter, and in the introduction to the Appendices, concise statements are given of the contents of the volume and of the general purpose of the Report of which it is a component part.

In the "Introduction" to each of the preceding volumes, an account is given of the origin and growth of this Report; which, in itself, keeping pace, "*pari passu*," with the rapid and extraordinary development of the educational movement for the introduction of Industrial and Art Training in the public schools and other educational institutions in the United States, has, of necessity, largely exceeded the limits originally planned by the Author.

While the first two volumes are given to elementary training in the public schools, the two volumes now in hand, are given to Technical Industrial Training either in special schools and classes, or in special courses in Colleges and other Institutions of Higher Learning. In the final Appendix to the present volume, Appendix "W," the information is brought down to the year 1896, and includes accounts of some of the latest endowed "Institutes" devoted both to elementary and higher Technical Training. In the body of the volume, and in Appendix "W.," in the accounts of the several institutions, full details of the "courses" in the studies included within the scope of this Report are given; in order that they may be of practical value to educators, for study and comparison.

In the following volume, "Part IV.," soon to be issued, accounts of some of the typical Technological Institutions, and of the industrial and artistic "courses" in the Land Grant Colleges of the United States, are given. In the closing volumes of the series as planned, accounts of the Schools of Fine Art, and of the Public Art Galleries, and Art Museums, are to be given. The manuscripts containing the early histories of these Art Institutions, prepared with the greatest care by the present writer, from the most authentic records and living authorities then attainable, have been long awaiting publication in this Report.

GRATIFYING EVIDENCES OF APPROVAL OF THIS REPORT BY
EDUCATIONAL AUTHORITIES.

An account of the favorable reception accorded to the first volume of this Report, by the educational world in this Country and in Europe, was given, in brief, in the "Introduction" to the second volume.*

RESOLUTION OF APPROVAL OF PART II., OF THIS REPORT, PASSED
BY THE NATIONAL EDUCATIONAL ASSOCIATION IN 1892.

The second volume, Part II., met with like appreciation; as is shown by the following official recognition, as expressed in the resolution passed by the National Educational Association, in session at Saratoga, in July, 1892.† This evidence of appreciation by the leading Educators of the country is very gratifying to the author and editor of this Report; and it is hoped that the suggestion that another edition of the work be authorized, may meet with the approval of Congress. The copy here given of the Resolution passed by the N. E. A., is copied "verbatim et literatim," from the official Journal of Proceedings.‡

"Evening Session.—July 15th, 1892.

" * * * The following resolution was read and unanimously adopted: *Resolved*, That the National Educational Association learns with pleasure that the second volume of the Report on Art and Industry—'American Education in Fine and Industrial Art'—prepared by Col. I. Edwards Clarke, and issued by the United States Bureau of Education, has just been published. This encyclopædic volume relating to industrial and manual training in public schools, is a storehouse of valuable information concerning those topics, and is a most timely contribution to the movement of the new education.

"The completion of this Report is awaited with great interest, and it is the judgment of this Association that when complete, another edition from the stereotype plates should be ordered by Congress; for the use of the Educators and Libraries of the country."

* (See pages xxvii—xxxii, of Part II.)

† National Educational Association. Journal of Proceedings and Addresses. Session of the year 1892. Held at Saratoga Springs, New York. Published by the Association. New York 1893. Pp. 848.

‡ See pages 28–29 National Educational Association. Journal of Proceedings, 1892.

Statements concerning the contents and purpose of the first volume of this Report, with a notice of the several editions of that volume, and a brief summary of the contents of Part II, are given in the "Introduction" to Part II.*

SUMMARY OF PLAN AND CONTENTS OF THE PRECEDING VOLUMES.

Meantime it may serve the readers of the present volume to re-state here, as concisely as may be, the purport of the two preceding volumes. The first Volume, "Part I.," of this Report, is given to an account of the beginning and progress of the movement for the introduction of Drawing in the Public Schools of the United States. This history is preceded by a series of original essays, entitled "The Democracy of Art;" and treating of the importance and feasibility of the Art Training of the American people. It is followed by a table of statistics of the Public Schools of Art and the Public Art Museums, then existing; and by a series of Appendices, A to H, containing much miscellaneous material from American and European authorities. These form a valuable collection of important papers, historical and contemporary, relating to the topics to which this Report is given.

WHY "PART II." WAS GIVEN TO AN ACCOUNT OF THE MANUAL TRAINING MOVEMENT.

The second volume as published, was the indirect outcome of the marvellous and rapid success of the movement for elementary art training—Drawing in the Public Schools—begun in Boston by those distinguished educators and public spirited citizens, Charles C. Perkins, Esq., the well known author and authority on Art Matters, and John D. Philbrick, LL.D., to whose enthusiastic devotion to Education and Art that city and the whole country, owe a boundless debt of gratitude. These gentlemen, now, alas, long since deceased, were fortunate in securing for the practical direction of the introduction of the new studies into the public schools of the City of Boston, and of the State of Massachusetts, the services of an experienced English Art Teacher, possessed of remarkable power to inspire enthusiasm in his pupils and his auditors,—the late Professor Walter Smith, Art Master.

The success of this movement attracted general attention; while

*(See Part II, pages XXIV-XXVII and CXLII-CXLVIII.)

the methods of teaching an entirely new special subject, simultaneously to a large class of pupils, by the regular teachers of the schools, were seized upon as equally applicable to other special branches of study.

The decease, within a brief period, of each of these three gentlemen, who had sought to lay the foundation for the adoption of elementary Industrial Art Education in all the public schools of the country, unfortunately deprived this promising movement for Industrial Art Education of their unrivalled leadership; and left it, at a critical time, without requisite guidance. The methods they had initiated and developed were at once seized upon and adopted by a body of enthusiastic educators; who in their free use of the term "Industrial Art," seemed to put all their stress upon the defining word "Industrial;" and, whether consciously or unconsciously, to wholly ignore the equally defining power of the characterizing companion word of "Art."

Now to an industrious, inventive, mechanical people such as are the Americans, the success of this appeal was assured and instantaneous; and the cutting of wood, and the hammering of iron, was begun with avidity by innumerable pupils in numberless schools, both private and public.

So general was this movement for the introduction of "Manual Training" and "Industrial Training" throughout the public schools of the United States, and so rapid was its progress, that the author of the present Report was fairly forced to lay aside the material then nearly ready for the press, in order to try to keep record of the ever varying phases and developments of this latest educational experiment. The volumes thus delayed, with additions requisite to bring the record nearer to date of issue, are comprised in Parts III, and IV, of this Report; as these are now, (December, 1896), mostly already in stereotype plates, it is to be hoped they may be in the hands of the public early in 1897.

The large volume, now known as the second volume—"Part II."—of this Report, is mostly given, with its appendices, to accounts of the movement for the introduction of Industrial and Manual Training in the public schools and other educational institutions in the United States; and to discussions awakened by these new appeals to Educators for the extension of the Curriculum.

The claims of Art, and its relation to Industries, as well as to the

higher nature of man, will, it is hoped, not be found by the readers of that volume to have been wholly ignored, in the pressure of recording the history of the rapid development of "Manual Training," and its cognate activities.*

This movement, thus set forth at length in Part II., seemed for a time to threaten the extinction of the earlier movement for putting elementary Art Training in the schools, which had been so well begun, seemed so promising, and was so desirable for American Youth, the greater number of whom, before that time, had few opportunities to learn anything practically of Art, and its possibilities; while of the historical importance, and æsthetic value of this prime factor of civilization, they were equally ignorant.

In the judgment of the writer there are increasing evidences at the present time of a marked reaction against the exclusive adoption of this educational movement for teaching mechanics in the schools, and a growing willingness to recognise the inherent value of Art Training, as an important element in the education of children and youth, in the public schools, and other educational institutions, in the United States.

This arises partly from the fact that, as the novelty of what is termed the "New Education," passes; it is realized that "Manual Training," "Sloyd," "Wood and Iron Working," and other forms of the Manipulation of Material things,—the general adoption of which, in the first enthusiasm of their supporters, was at once to usher in an Educational Millennium,—must all take their relative place in the curriculum of the schools; just as Reading and Writing, Arithmetic and Geometry, Grammar and Geography, Drawing and Music, and other elementary studies in Letters, and Science, have been forced to do.

In this re-adjustment,—a pre-requisite to any true correlation of the studies of the public schools,—the lack of the Art quality in the industrial features of these new studies is forced on the attention, and the necessity of providing some place, in the courses of all the schools, for *Æsthetics*—the science of the Beautiful—is seen to be urgent. In the original scheme for Industrial Art Education as proposed for introduction in the schools of Boston, this need was recognised and

* See in this connection Part II., Art and Industry Report; Introduction, pages cxiiv-cxxxiv; Chapter I., pages 1-12; and Appendices "I," and "K.," pages 631-766.

provided for; and as the classes progressed it was designed that the Art element should be made more and more prominent till, in the highest grade, the needs of those wishing to prepare themselves to follow Art as a profession, to pursue the elementary art studies of the Designer, the Sculptor, the Painter, the Architect, were to be provided for; just as in the public classical High School of Boston, tuition in the elementary studies in Greek, Latin, and Mathematics, is given to those pupils who wish to prepare for admission to the classical Colleges.

As Walter Smith, Art Master, who was the organising spirit in practically effecting this new departure, was also, a professional sculptor, it was no part of his plan,—as the writer can testify from personal knowledge,—to ignore or neglect the claims of High Art; when, in his judgment, the time had arrived in the development of the elementary processes, for advancing to the Professional Studies. As it is well known that the great majority of public school pupils do not advance even to the English High School, and as, during the too brief administration of the late Professor Smith, this need for preparation for professional Art Courses did not arise; and therefore, as observers of the courses of Industrial Drawing as now given in the grades of the public schools can see but the incomplete plan, the unfinished shaft of the column, lacking the carved capital that was designed to crown it with the complete beauty of perfect art;—the truncated tower of the edifice, wanting its uplifted spire,—it has seemed but just to indicate that, as the pupil in the lowest grade of the public school may now pursue his course, if he so elect, through the High School, to the College and the Professional School; so, in the plans of the originators of the movement for putting Elementary Art in the public schools, the opening ultimately of professional schools of Art, for admission to which the public schools were to provide the requisite preparatory courses, was kept in view.

The opening of art classes in connection with the Boston Museum of Art, may be cited as, in a measure, an evidence of this purpose; since Mr. Perkins, who was most active in the movement for introducing elementary art training and, also, in that for providing Art Decoration of the school rooms, and art materials for use in Illustration of the studies pursued in the Public Schools;

was, at the same time, one of the founders, and most enthusiastic promoters, of the Art Museum.

It often happens in the discussion of this, and like educational questions,—(as is occasionally seen to be the case in the co-temporary discussions of the money question)—that two distinct propositions, or, rather, phases of a single question, are inextricably tangled together; so that nothing results but confusion, both in the arguments advanced and in the conclusions reached.

The educational, disciplinary nature of a study, and its efficacy in aiding the mental and physical development of the child, is a legitimate feature for consideration when its admission to the curriculum of the school is in question.

The value of the manual dexterity to be acquired by the individual which may add to his usefulness as a wage-earner in after life, though in certain relations of the gravest importance, is outside of consideration in matters purely educational. It is so, because the value of a given study arising from its power of disciplining and developing the mental faculties of the child, or youth, is altogether distinct from, and often different to, its usefulness in increasing the wage-earning power of the adult.

This will be readily recognised if the claim of the educators is admitted; since they urge that the pedagogic value of a study, or occupation, ceases the moment it becomes habitual, so that it no longer rouses the attention; for it is readily seen that the results of all these mechanical operations of industrial art have no pecuniary value, until the operator has acquired such facility of mechanical perfection as is only to be gained by much repetition.

Now it may freely be conceded that, in schools and institutions for older pupils, this acquisition of mechanical skill may be, indeed is, a perfectly legitimate purpose and end; and such schools as the Manual Training Schools in St. Louis, Chicago, and other cities, as well as the Manual Training Departments in the several Institutes of Technology, and those connected with the Land Grant, and other Colleges, are all of the class of Trade, and Professional Schools, more or less developed. The practical purpose of these schools, to give technical skill in the several art industries taught, is especially characteristic of the classes sustained by the voluntary organizations whose histories are recorded in the present volume. In the accounts

of the older societies it will be seen that the classes opened by them at first to give the simple elements of a common English Education,—such as was provided later for all children, by the general opening in all American communities, of free public schools—have generally been changed into elementary technical schools; designed avowedly to develop the wage earning capacity of their pupils. It is most interesting to observe how these classes have, in different places, developed in diverse directions; controlled largely by the industrial needs and demands of the given locality. In several instances these classes have grown into high class Schools of Design; with Departments of Engineering, Architecture, Painting, Sculpture, and Engraving.

In discussing the desirability of teaching “Industrial Art Drawing” in all grades of the public schools of the country it must be remembered that in the elementary public schools,—which are the only public schools attended by the great majority of American school children, and that five years of attendance, somewhere between the ages of five and twenty-one years, is said to be the limit of such school opportunities enjoyed by the larger number of school children—it is no part of the purpose of the schools to make skilled mechanics on the one hand, or professional artists on the other; though it is believed that the elementary knowledge of drawing will be found of value in either occupation. Were this limitation of the opportunities of the public schools kept in mind, much of the somewhat common criticism concerning the movement for introducing Industrial Art Training, so far as it may be carried in the lower schools by teaching drawing in all the grades, need never have been spoken or written.

The elementary schools claim only to give the beginnings of knowledge;—to teach the child the alphabet, the numerals, the parts of speech with their simple relations to each other, and such facts about the physical Universe in which he finds himself, as time permits; with this would seem to go naturally such training of the eye and hand as will enable him best to note and to retain such facts;—to read, to write, to cipher, was the aim in the early days; to also, teach the child to draw, that is, to see and to note facts, was the addition to the curriculum of the common schools, which Walter Smith, and his co-adjutors, sought to make possible.

Now when you have given a child the Alphabet, you have given

him the pass-key which unlocks libraries,—those treasures of the world—the precious repositories of Human Knowledge. When you have given him a knowledge of Drawing, with some skill of hand, you give him the “open sesame,” to the whole world of External Nature, and of Human Art. When you give him Manual Training, skill in the use of tools, you have given him the mastery of materials, the power to erect the permanent home; and so, have changed the roving savage into the steadfast child of civilization. All progress has become possible. These Three gifts epitomise the Evolution of the Human Race!

It has been the belief, held by the author of this Report, that the movement to promote the elementary technical Industrial training, and that for the Artistic training, of the children in the public schools, depended upon the same conditions. A knowledge of Drawing, is the fundamental basis, both of Mechanical industries, and of Artistic development; for this reason the earnest purpose underlying this Report has been the desire to promote the teaching of Drawing in all the elementary and higher public schools in the United States.

I have said that a return to the Art ideal which inspired the early promoters of the movement—but which at the time when Part II was issued, seems to have been overslaughed by the industrial idea, pure and simple,—seemed to be now indicated; and that the industrial movement was gravitating to its proper relative place among the studies which are comprised in the curriculum of the schools; as, sooner or later, all studies admitted to the schools, must do; for, in any well planned working scheme of education the equitable correlation of studies must be accurately adjusted and maintained.

At the annual meeting of the National Educational Association held in Buffalo, N. Y., in July, 1896, two papers relating to the topics comprised in this Report were read before different departments. These are given in the October–November, 1896, number of “Art Education.” I should have been glad to include these two papers in Appendix “W.,” had they been available at the time. One of these, a charming paper, entitled “Art in the School Room through Decoration and Works of Art,” was read before the Art Department, N. E. A., by Miss Stella Skinner, Director of Art Education in the Public Schools of New Haven, Connecticut. This is a most suggestive and practical paper for teachers, showing by examples,

how to make use of Art objects in the school room, in all grades, from Kindergarten up. I shall hope to be able to include this, or some fuller paper on like topics, by the same author, in a succeeding volume.* Miss Skinner, is also, the joint author with Miss M. Rachel Webster, Principal of one of the New Haven city public schools, of a pamphlet "List of Casts and Pictures, etc.," for use in the first Eight Grades, for Adornment of School Rooms and as aids in illustrating general studies. Further reference to this valuable "List" will be found in note to page 1057 of the present volume.

The paper read at Buffalo, is especially serviceable in connection with the "List" just referred to. The other paper, by Mr. C. F. Carroll, Superintendent of Public Schools, Worcester, Massachusetts, treats directly of the problem already referred to, namely: how to secure the correlation of Manual Training with the other studies of the school; and opens with a reference to the great pressure of new studies for admittance to the curriculum.

The interaction between mind and muscle, and the claims of Manual Training for admittance to the schools, founded on the child's instinctive desire for motion and exercise, as well as the importance of a due recognition of this demand of Nature, are well stated. As our author includes, with approval, the two distinct phases of Manual Training, showing concisely the especial value of each; I quote a few passages from his thoughtful consideration of these sometimes apparently conflicting views.

MANUAL TRAINING AND THE COURSE OF STUDY.†

During the last twenty years we have introduced into the public schools the elements of many branches of learning. In place of the three R's, we find in the course of study from fifteen to twenty specified subjects. All this change represents an attempt to bring the child into contact with life as he will find it later. It is assumed that the child in the schoolroom is already *living*, and that the conditions and forces of our civilization are here represented.

We are making a desperate attempt to form a course of study that will fit the new theory of education.

* * * * *

* A large part of Miss Skinner's paper, with other related material, will be given in the chapter prepared by Professor Stephen B. Weeks, U. S. Bureau of Education, in Part II of the forthcoming Annual Report of the U. S. Commissioner of Education, for 1895-1896.

† Extracts from a paper "read before the Manual Training Department of the National Educational Association, Buffalo, New York, July 9th, 1896," by Superintendent C. F. Carroll, of Worcester, Massachusetts.

NATURE'S DEMAND.

Every form of elementary education is physical on one side. Some form of muscular activity accompanies every normal brain reaction. Either movement or inhibition is one-half of every so-called process of perception, cognition, or reflection. Every kindergarten, every physical or industrial laboratory in the land, goes to prove that this is true. Our life is made up either of new experiences or experiences of the past, and experience is but another term for activity. * * *

In the laboratory and in the kindergarten, we find the muscles called into use. From the kindergarten on, all activity of the muscles has been deliberately checked. Writing calls for the minimum of action. Drawing is often even more limited in its scope. * * *

To a humane teacher, whose eyes have been opened, the present treatment of children in the graded system, in extreme form, seems nothing less than cruel and shortsighted. Children enter the schoolroom in the morning flushed with enthusiasm, craving opportunity to expend their energy in our service. In ten minutes, every normal inclination is likely to be repressed, every physical impulse chained fast, and a day of suffering is begun. The delightful spirit of the best teacher may do much to relieve the sufferer. The exercises of the day may be varied in point of information, may be brief and full of variety; the sanitary conditions may be excellent, but the child still has the sense of confinement, and wears the look of a prisoner. * * *

A single element is lacking, and no substitute can take its place. In every variety of education outside the schoolroom, the manual element is in some way provided for. This is true in the case of little children. Nature makes no mistake in this direction. The kindergarten takes its suggestion and with unerring correctness meets the conditions. * * *

MATERIAL ADVANTAGES.

Many people object strenuously to the arguments that Manual Training in the schools would enable the future citizen to more certainly and more comfortably make his way in the world. I will confess that I have no sympathy with the objection. I have never seen a Swiss or a Swede begging bread in the streets of America. I believe the reason why these men are so universally self-supporting is due largely to the fact that in Switzerland and Sweden manual education of some sort, at an early age, is almost universal. In addition to a so-called liberal education, the children, even of the most thrifty, in both these lands, are skilled in some line of industrial effort. This may or may not mean that every child learns a trade, but it does mean that every child is skilled in the use of tools of some kind. He would prefer, at any stage of life, to use these tools rather than to beg.

It is a sad commentary on the so-called highly educated of many other European nations that some of them are the most hapless and persistent beggars in our great cities. I need not say that these men are frequently a source of public discontent and strife. If I were to speak for my own boy, I should earnestly desire that he might be master of some mechanic art, as the best safeguard against poverty, and as the best assurance that he would become and remain, a self-respecting citizen. *Digitized by Microsoft®*

MANUAL TRAINING AND ART.

Art, in any sense, is but a form of Manual Training and all that can be said in favor of the development of the beautiful is an argument in favor of Manual Training in the schools. All that can be said in favor of lifting up man by making him able to express himself with the pencil, with the chisel, or with the rule and the compasses, is an argument in the same direction. The world passed upon this question centuries ago. Instruction in the beautiful, power of expression in the concrete, possession of an ideal in art by every child—all these considerations are not in debate. I mention these points here as a reminder that the civilization of the hour, in its best form, is incorporated in theory, and somewhat in practice, in our common school system. At the same time, we are obliged to confess that the multitude of children in our public schools have not yet felt the saving power of the doctrine that Manual Training, in its best form, will tend to make every man a self-respecting citizen, and insure him a livelihood, and that in another phase it gives a perception of beauty, and fills the soul with images and ideals that lift man above the commonplace.

* * * * *

Manual Training as connected with Art has the effect of elevating the imagination and increasing our capacity for the enjoyment of things beautiful. It also gives an additional and most effective means of expression. It was urged that continuous bodily effort was essential to the establishment of character or the training of the will. Our city civilization is weak and protoplasmic because it lacks the effect of such effort. The systematic introduction of Manual Training appears to be the only remedy for this enervated condition of our city population; the only universal stimulus to ambition and original effort on the part of our children.

SUMMARY OF ARRANGEMENT OF CHAPTERS AND APPENDICES IN PART II. OF THIS REPORT.

The second volume,—“Part II”—of this Report, to which such full reference is here made, contains 1338 pages, with an “Introduction” of CXLVIII additional pages. The pages of this volume are about equally divided between the book proper and the “Appendices.” The “Introduction,” is also largely used as an additional “Appendix”; a device made use of to include desirable material which came to hand too late for insertion among the Appendices. The body of the book is comprised in twenty chapters; the first eleven of which relate to the origin and early development of the general movement for introducing in some form, both Art and Industrial Training in the Public Schools.

The remaining chapters recite the details of the experiment of introducing the new manual training studies in the schools of different States, Cities, and Institutions.

The Appendices, are lettered "I" to "Q"; and contain a great body of information relating to the topics of the Report, including miscellaneous papers, consisting in part of Reports by educational authorities, discussions by Educators, Addresses, etc. etc., treating historically and contemporaneously of the Public Schools; and reciting the experiments undertaken in this country, and in some of the countries of Europe, with the purpose of ascertaining the best practicable methods of securing for school children satisfactory training in the Elements of Art and the Industries. The final Appendix, echoes the theme of "Part I"; since it includes a collection of recent papers relating to Drawing in the Public Schools.

Very full "Tables of Contents," a copious "Index," and "Running page titles," with frequent "Cross heads," which break the solid page, facilitate reference to the somewhat miscellaneous contents of this bulky volume.

The rapidity and extent of artistic development in the United States—to the early indications of which attention was called in some of the Preliminary Essays of Part I,* and the continuous development of which it is the intention of the Author to record at some length in a succeeding volume of this Report—has kept pace, with the movement for Manual Training, which last led, as just stated, to the necessity of interrupting, by the preparation of the volume now known as "Part II," the issue of the series of volumes of this Report as they had been planned. This was done in order to record the progress of the Industrial Education movement in the Public Schools; and also, to provide such material as might serve the needs of the promoters of that movement, by giving to educators generally, access to the recorded results of similar experiments in other countries.

PURPOSE OF PRESENT VOLUME AS FIRST PLANNED AND AS MODIFIED BY RAPID DEVELOPMENT OF EDUCATIONAL MOVEMENTS.

The present volume had been included in the early plan of the series as Part II, and was prepared for publication simultaneously with Part I; but its issue was delayed as has been already sufficiently explained.

As is clearly set forth in the opening chapter, the present volume, (See pages 1-6.) was designed to contain a history of the

* See Part I, Pages CXLI-CLXXXIX, and CCXI-CCLVIII.

origin and development of several of the older characteristic social and educational associations in our cities; first founded by organizations of public spirited citizens, for mutual aid and improvement, and, in the early years,—before the era of public schools,—provided with classes for instruction of apprentices and others, in the common English studies; and also, of those later endowed Schools of Science, founded by single benevolent citizens, who had been impressed with the usefulness of the technical classes, and schools, which, when the English classes were superseded by the public schools, were opened by these associations in order to give opportunities for receiving elementary technical training in arts and industries, to those youth who otherwise could enjoy no such advantages.

The benevolent educational efforts of these elder Associations, as well as the modern personally endowed Institutes and Technical Schools, appeal to the noblest emotions of Humanity. The latter are the vital and enduring monuments to perpetuate the memory of individual citizens, but both alike, redound to the honor of the Republic; showing as they do, that the citizens of a Republic, equally with the monarchs and nobles of other lands, are prompt to recognize, and eager to supply, the needs of less fortunate citizens for educational opportunities.

The present volume, "Part III.," of this Report, contains accounts and histories of both classes of these admirable institutions. Part IV., will contain accounts of several typical Schools of Science, and of the Land Grant Colleges of the United States, so far as instruction in Drawing, in Manual Training, and in technical Art Industries enter into the courses of these several Schools, Colleges, and Technological Institutes.

In the Appendices, of each of the volumes of this Report, will be found much relating to the Institutions named in these volumes, and much of miscellaneous matter relating to the topics comprised in the very comprehensive character of this Report; which is planned to include both the Kindergarten, and the Fine Art Academies and Museums, as well as all that may fairly be comprised between these Educational extremes.

As has been previously stated the design of this present Report is inclusive of the complete subjects relating to training in Domestic Industries, to Industrial Art Training, and to the training in the

Fine Arts, of the American People, primarily in the Public Schools; but, also, including other educational instrumentalities, such as are undertaken by Voluntary Associations; by Institutions, endowed or otherwise; by Manual Training Schools proper; by the National Land Grant Colleges; by Schools of Technology; and by such of the Higher Institutions of Learning, as number among their courses, required or elective, courses in Manual Training, or in the Fine Arts.

The Professional Art Schools, Public Art Galleries, and Art Museums, are necessarily included; nor can reference to those great World Exhibitions of Art and Industry, which have so wonderfully quickened and widened the inventive and artistic development of modern civilization, be wholly omitted; though the attempt to include in this work, any adequate account of these great historical events, would be foredoomed to failure.

While it is clearly not possible, even in a work as extended as the present one, to give an exhaustive and complete account of all the individual schools and institutions, which could fairly claim to be included in such a comprehensive category, yet it is hoped that it will be found that the several classes of schools and institutions, are here fairly represented; though, of necessity, an account of only a few typical schools, or courses of study, can be given in full.

It has therefore, been the aim to select those which are most characteristic, and to give the details of their courses and methods. As the body of this volume had been so long in preparation, a special effort is made in Appendix "W.," to include accounts of some of the most recently founded institutions; as well as of the latest developments in the educational world of recent activity in the various forms of Industrial Art Education.

THE GENERAL PLAN AND PURPOSE OF THE PRESENT REPORT.

The plan of giving the separate volumes of this Report to special topics; as one, to "Drawing in Public Schools;" another, to "Industrial and Manual Training in Public Schools;" the present volume, to "Industrial and Technical Training in Associations and Educational Institutions;" and the fourth, to "Technical Training in Schools of Technology and U. S. Land Grant Colleges;" has been adopted to facilitate reference, and to meet the demands for such information as they have arisen.

There was, however, no intention, in the adoption of this general plan of arrangement, to exclude from any volume of this series any topic, or any institution, which properly come within the scope of the general purpose of this Report as a whole; rather, on the contrary, is it sought both to link the volumes together, and to serve the convenience of the reader who may chance to have access to only a single volume of the set, by inserting in each one, some articles and references which may serve to illustrate the comprehensive character of the Report.

EFFECT OF THE SUCCESS OF NEW MOVEMENTS ON THE VITALITY OF THE LITERATURE WHICH WAS INSPIRED BY THEM.

The penalty of the complete success of any new movement in morals, customs, education, government or religion, is that it speedily renders obsolete the pioneer literature; which has been the inciting cause, and contemporary record, of the movement itself.

A striking instance in point in this country, was occasioned by the issuing of the Emancipation Proclamation by President Lincoln; which relegated to unfrequented alcoves of Public Libraries, hundreds of long since forgotten pamphlets and volumes, once instinct with passion and pathos; eloquent with earnest pleadings for the slave, and fiery protests against the cruel laws and customs inseparable from slavery. Even the very names of the leaders of the Anti-Slavery Cohorts, once known so well and, in some portions of the country, hated so bitterly, can hardly be recalled. While that epoch-making book, "Uncle Tom's Cabin," once a familiar volume wherever in the whole world books were read, and which was dramatized and played in various languages, in the theatres of many countries, is almost unknown by the present generation of readers; though the brilliant authoress of the book that won the greatest success of her time, has but just passed from among men.

In view of such facts of forgetfulness, Literature divides itself into two distinctive classes,—each subdivided by many cleavages—the "Enduring;" which, dealing with the eternal Laws that outlive the Ages, pays no heed to contemporary history, to the movements or passions of living men; the "Transitory," which busies itself with the immediate needs and sufferings of its fellow men, and whose mission it is, to protect the oppressed; to comfort the suffering; to

strike down the tyrants; to free the slave; in short, to help on, by every means, the painful upward steps of struggling humanity;—to encourage the weak; to strengthen the strong; to cheer and gladden all workers for good;—all who seek to make the lives of men on earth, brighter, better, and more useful. So, in their days of turmoil and danger, wrought Luther, and Milton;—so served the Puritans; the Huguenots; the Covenanters; so, in many barbarous lands, among savage tribes, went the nameless missionary priests of the Catholic Church; so, in later days, toiled unselfishly John Howard and Charles Brace; Father Mathew and Gough; Garrison and Phillips; Giddings and Sumner; Greeley and Lincoln; Pestolozzi and Froebel; Horace Mann and Henry Barnard; Ruskin and Hamerton; Charles Norton, Charles C. Perkins, Walter Smith, and John D. Philbrick; each in their several ways.—Reformers in Religion; Missionaries to those in prison and in poverty, and to those held in the crueller bondage of intemperance and vice;—freers of the alien Africans held in slavery; workers for those little children of the people, else lacking all early opportunities to acquire the keys of knowledge;—messengers to those ignorant of, or indifferent to, God's Gifts of Beauty in Nature and in Art; Helpers to all workers, to uplift themselves and their work!

All these, are fellow workers with their living fellow men in their own generation; helping on, as best they may, the coming of that 'Better Day' for which the whole Creation hopes and waits with joyful expectancy.

Nor must it be assumed that those "Immortals" in Literature, who literally seem to sit apart on their lofty thrones, high uplifted above earthly turmoil and the fret of daily life, like the Gods of Old, "careless of mankind";—that Homer, and Plato, Shakespeare, and Goethe, and, one is tempted to add for America, Emerson;—have had no part or lot, in this bettering of the world.—Far otherwise! From their unfailing springs of living waters, as from Siloam's sacred stream, and Kedron's brook, the working helpers of our race have drunk deep draughts of wisdom and inspiration!

PART OF PLAN OF PRESENT REPORT IS TO PRESERVE THE
LITERATURE OF THE MOVEMENT IT RECORDS.

It is because the early efforts of such enthusiastic reformers as were the first advocates of the new movements in education

recorded in this Report, are generally embodied in ephemeral literature; such as occasional addresses to audiences of educators, reports of committees, communications to the press, etc., that an attempt has been made in the appendices to the volumes of this Report, to preserve such papers; in the desire, on the one hand, to strengthen by their authoritative utterances the arguments herein adduced; and, on the other, to collect and preserve in a more permanent form, these records of the men who labored so earnestly, and, as the results have shown, so successfully, to improve and enlarge the education of the people.

While, as just stated, the immediate effect of popular success and the general acceptance by the public of the once novel doctrine, is to make commonplace the early literature of the cause, which, when first promulgated, had the freshness and interest of a new gospel; and so, those very works cease to attract their cotemporary public, or the generation immediately succeeding that which witnessed and took part in the "reformation"; yet, as time passes and professional historians arise, the neglected writings begin to acquire historic value; and, a century or two later, may awake to a new life; and be found of interest and value to future generations of readers and students.

As suggested, it is only an additional proof of the success of their efforts that much of the literature, here collected, which but a few short years since had all the charm of novelty when first spoken by these educational enthusiasts and reformers, has already become "familiar as household words;" and soon may almost be classed as obsolete, as the steps they labored so earnestly to have taken, are passed; in the steady progress of the people to higher realms of artistic and industrial activities. Yet, who shall find cause of regret in the fact that 'words,' have thus been transformed into 'works'? These earnest forerunners could ask no better guerdon than to know that their efforts had brought forth fruit an hundred fold; as the thoughtful reader of the records in these volumes must admit has been the case, since first the effort to put Drawing in the public schools, was begun in Boston!

The endeavor to preserve in this Report, a permanent record, both of the men who first undertook to educate the workers, and of their unselfish efforts; and to make this, a memorial of the names of these early benefactors, has been with the present author, a labor of love.

NOBLE PURPOSES AND HIGH ASPIRATIONS OF THE EARLY
FOUNDERS OF "MECHANICS INSTITUTES."

It has happened that as, through persistent research, the early records of the older organizations have become familiar, and it is seen how their members sought, despite scanty means and little outside encouragement, to secure for the youth of their day better opportunities for acquiring the elements of letters and of skill in simple crafts, than they had themselves been privileged to enjoy; one's respect for these simple mechanics of two and three generations ago, rises to reverence, as they are thereby seen to be honored founders of the Republic, equally with their fore-runners the "embattled farmers" of Concord and Lexington, who "fired the shot heard round the world," in the opening struggle for the political independence of this nation; so these peaceful workers have by their unselfish efforts, made possible the industrial independence of the American People.

The attempt is made to retain so much of the historical details of the founding and early efforts of these societies, as will show their gradual development and evolution into the institutions of the present day. This, of necessity, when a century, more or less, of history is to be reviewed, demands space and necessitates a multiplicity of detail.

PUBLIC SPIRITED BENEVOLENCE EQUALLY ACTIVE IN THE
PRESENT DAY AS IN THE PAST HERE RECORDED.

It is most encouraging, after this study of these philanthropic undertakings in the days of long ago, when population was scant and means contracted, to observe how, in our own day, philanthropists of like spirit, but with enlarged means, have not failed to follow in the footsteps of these worthy pioneers; and have been eager to give to the public freely, the larger opportunities demanded by the vaster needs of the overflowing multitudes and the immense industrial undertakings of the present day.

The modern "Institutes," of Cooper, Pratt, Tulane, Drexel, Armour, Tome, and their compeers, are, in their industrial departments, the logical results of the spirit of practical helpfulness which organized the several societies in the older cities of the country, as recorded in this volume; while, in their benevolent purposes, the

wealthy individual founders of Schools of Science and Technology, in the present day, prove themselves to be worthy successors of McDonough, Girard, Peabody, and their contemporary philanthropists, whose noble gifts in the Past have made such a glorious record and set such high example.

HOW NEW MECHANICAL INVENTIONS MAY MODIFY AND CHANGE EDUCATIONAL NEEDS AS WELL AS INDUSTRIAL DEMANDS.

The wide extending, far reaching effects of a single apparently simple invention, or improvement, in some well known process or industry, have been so clearly demonstrated to the present generation, that there would seem to be no possible occasion left for argument as to the necessity of providing for thorough training in the industrial arts and processes, in any successful attempt to solve the educational problem of how best to fit the coming generation of workers to meet the inevitable, ever-growing demand for varied and readily adaptable skill.

A single invention, the rapid "lift" or "elevator," has utterly revolutionized the art of building during the past twenty years; and effected an absolute transformation in the appearance of the streets, and in the sky line, of many of the cities, and prosperous towns, of the United States. The Art of the Architect, and the Trade of the Builder, have alike been revolutionized. The Iron Founder, the Steel Worker, the Blacksmith, have largely supplemented the Mason, the Carpenter and the Builder.

In like manner, the changes in methods of propulsion and traction of street railroads in cities and towns, have effected almost as noteworthy changes as did the first use of steam for transportation on land and water. The dispensing with the use of many thousands of horses, with the consequent lessening of the demand for hay and grain for their feed, has effected an alarming depression in the demand for horses, and for horse food, throughout the agricultural regions. The farmers of the country thus suffer untold loss; due to this new way of providing for the carriage of the crowded population of the cities. Later, the invention, and recent marvellous increase in the use of the bicycle, has led to countless embarrassments in a great variety of employments and kinds of business.

All these changes in methods, and their resultant influence on

business, were to have been foreseen in view of the world-wide effects of the discovery and general use of the Telegraph, and later, of the Telephone; which two inventions have revolutionized the methods of Trade and Commerce all over the world.

In the New Era in which we are now living,—which perhaps may be properly termed the Era of Electricity, as the immediate past was the Era of Steam,—the changes due to new discoveries in the seemingly infinite realm of Nature, promise to be constantly accelerated. Well equipped scientific Investigators are ever seeking new solutions for the problems of the Universe; and in every domain of Nature, new discoveries are constantly heralded. Civilized man seeks ever to multiply the efficiency and power of the individual,—to release human muscles from toil, by craftily replacing the clumsy or deft fingers of flesh and blood, by the tireless, supple or rigid shafts of steel, that seem, in their intelligent activity, as if gifted with magical power. Whether then, it is a question of training the Captains of Industry, or the workers in the ranks, it is clear that each should be early trained in the elementary knowledge of the Industrial Arts, as well as in the like elementary knowledge of his “Mother-tongue.” The present volume is given, in part, to the recital of how American men have sought in the early years of the 19th Century, to solve these knotty problems incident to the education of a people; and, also, to a showing of the methods by means of which the Men of To-Day, are seeking their solution.

These histories contain a record of the unselfish efforts of many noble men to give to each rising generation of workers, better educational opportunities than were given to themselves. It is an inspiring and glorious record of the successful co-operation in this good work, by numberless modest helpers of their Race. To their memories we may fitly pay a like tribute to that paid to the unknown martyrs of Freedom, by the great Hungarian Orator; when, at Bunker Hill, he paid his homage “To the nameless Corner Stones of American Independence.”

ORDER OF THE CHAPTERS AND APPENDICES.

The present volume of this Report comprises a brief “Introduction,” seven somewhat extended historical chapters, and a series of six “Appendices,” (R to W, inclusive).

As the motive and arrangement of this volume is sufficiently set forth in the opening chapter, (see pages 1-6) it is not necessary to repeat the statements there set forth, further than to indicate that,—in contrast with the preceding volume, which was given to the account of the new movement in Education then just begun in many of the public schools of the country,—the present volume is given largely to the individual history of each of several long established organizations in a few of the larger cities; supplemented, especially in the final Appendix (“W”), by accounts, in detail, of the completely equipped and munificently endowed Technical Institutes, recently founded in several places by local individual philanthropists.

The present volume (Part III), like those which precede it, and those which are to follow, adheres as closely as may be, to the design of this Report as a whole; as indicated in the Introduction to Part I, and repeated with some variations, caused by the rapid development of industrial educational movements, in that to Part II. As in the previous volumes, all the matter printed in Long Primer type, is original material by the author and editor, while all quoted matter is printed in Brevier type. For any old fashioned or other peculiarities of spelling and punctuation in the long primer matter, the author is alone responsible. Quoted matter is in all cases printed as in the originals, so far as the editor can effect, which must explain a certain want of uniformity in the retention or elision of double consonants, and in closeness of punctuation. This is said in justice to the Public Printer, and to the compositors and proof readers of his office, to whom the author is indebted for countless courtesies and most efficient aid. The analytic tables of contents of the Chapters, and lists of papers in the Appendices, which precede the “Introduction;” as well as the “Running page titles,” frequent “Cross heads,” and the “Index,” at the end of the volume; are given in this, as well as in the former volumes, in order to facilitate ready reference to the miscellaneous contents of these large books.

The opening chapter, as already indicated, is given to a statement of the plan both of the Report as a whole, and of the purpose of the present volume in detail.

This volume is given to accounts of Mechanics Institutes, or similar Associations, and of the Free Evening Drawing Schools, in some cities in the United States; the similar Associations and Schools in each city, being grouped together in a given chapter. It is the application of

Art to Industry, and the giving instruction in Drawing, which leads to the admission of the accounts of the Societies and Schools, which appear in this volume.

Incidentally, in these accounts of the small beginnings and gradual growth of these Associations, many interesting aspects of the development and progress of our American cities are revealed; often the incidents are strikingly characteristic of the way in which, from humble beginnings, the modest towns of a century ago have been transformed into the crowded brilliant prosperous cities of to-day.

Chapter II. Recites at length the history of Mechanics Institutes and similar Associations in the city of Philadelphia, beginning with that of "The Franklin Institute," founded in 1824.

Chapter III. Is given to the history of "The Maryland Institute for the Promotion of the Mechanic Arts" in the city of Baltimore, Maryland, founded in 1825.

Chapter IV. Contains the history of several institutions in the city of New York; opening with that of "The General Society of Mechanics and Tradesmen"; founded in 1785.

Chapter V. Is given to the histories of three Institutes founded by individual citizens in three different cities.

These are the Cooper Union, in New York; founded by Peter Cooper, in 1859; The Pratt Institute, Brooklyn, New York; founded by Charles Pratt, in 1887; and the Drexel Institute, Philadelphia; begun by Anthony J. Drexel, in 1890, and founded by his Deed of Trust, dated October 17th, 1891.

These modern institutions, supplementary to the free public school education provided by the Community, are striking landmarks which show the growth of the popular demand for some adequate provision for the acquisition of Technical Industrial, and Artistic, Education. These are the practical "Industrial Universities" of the Common People. So typical are they of the educational needs of the Past, and the present educational requirements of the American People, that much of space is here given to the history of their early beginnings; as well as to the statements in detail, of their educational methods and courses. In the final Appendix to this volume, like accounts are given of several similar institutions recently founded.

Chapter VI. Contains the history of the Ohio Mechanics Institute, Cincinnati, Ohio; chartered in 1829; School of Design opened

in 1856. An interesting history of a characteristic local institution, partaking, in its individual life, of the growing prosperity of "The Queen City," for nearly seventy years!

Chapter VII. Is given to accounts of Technical and Drawing Schools in several cities. These are The Cincinnati Technical School, founded in 1886; and Drawing Classes in Columbus, Ohio; Chicago, Illinois; and Erie, Pennsylvania.

CONTENTS AND ARRANGEMENT OF THE APPENDICES.

As the present volume is given to the history of individual institutions, and in consequence includes but few separate chapters, as contrasted with the number of chapters in Part II; so, similar conditions limit the number of Appendices, of which there are six, from "R" to "W" inclusive, which comprise a total of 43 separate papers. A brief summary of these Appendices, is given in the general introduction to them and, in most cases, each has a few special introductory words.

A list of the titles of the several papers in each Appendix, is given in the table of contents which precedes it. The general purpose of the Appendices in this, as in the previous volumes of the Series, is to record the status of the Industrial Art and Manual Training Movements, both in the United States and in the countries of Europe; and to preserve such papers relating to these movements as seem of permanent value. "Cross heads," are freely inserted in these pages by the editor; if needed to facilitate reference. Readers, as a matter of course, will apply to the Officers of the Institutions herein described, for their latest catalogues, programmes and bulletins; in case they wish later information than is given in this Report.

Appendix "R" contains, as pertinent to the historical character of this volume, the Address on "Technical Education," delivered before the State Teachers Association of Pennsylvania, in 1874, by George Woods, LL. D. This address, preceding the Centennial Exposition by two years, urges the importance of the idea of Technical Training in connection with public schools, and points, with emphatic approval, to the example set by the State of Massachusetts, in 1870.

In view of the rapid developments of the industrial educational movement in public schools, in many parts of the country, as recorded in "Part II;" this early appeal to teachers outside of Massachusetts, is of historical interest.

As reference to "Part I.," of this Report, shows; little progress in introducing instruction in industrial art drawing in public schools had been made elsewhere than in Massachusetts, before the Centennial Exposition of 1876; which great object lesson gave a mighty impulse to the artistic development of the American People.

In a few localities in the States of Maine, and New York; in the City of Philadelphia, and in the City of Washington, D. C. the early experiments in Boston had, from the first, been watched with interest and partially adopted; but it was not till after 1876, that the movement gained much foothold in the public schools of the country generally. This movement, as already fully remarked on, was soon, for a time, turned largely to the promotion of instruction in technical Manual Training, with a very small modicum of the Art idea retained. Dr. Woods Address, it will be observed, is given almost wholly to the practical value of technical industrial training and to its educational importance to an industrial community.

Appendix "S" consists of papers by leading Educators, "On the need of Elementary Training in The Industrial Arts;" and opens with a paper by Hon. Wm. T. Harris, LL. D., on "The Readjustment of Vocations." This is part of a paper published by Dr. Harris, in the North American Review, in 1878; and is a concise summary of the educational needs of the New Era, ushered in by the wonderful developments of Science and Invention, which characterise the present Age. This is followed by a practical paper by Professor John D. Runkle, LL. D., taken from the 45th Annual Report of the Massachusetts State Board of Education, 1880-81; urging the imperative need of industrial training in the schools of the country, based upon the changes referred to in the previous paper by Dr. Harris.

The next paper, by Professor Sylvanus P. Thompson, an English authority, was published in the Contemporary Review, September, 1880. In this, he treats of "The Apprenticeship of The Future," and enlarges upon the necessity of thorough training resulting from the changed conditions of Industry as recorded in the two previous papers. In this paper by Professor Thompson, accounts are given of four typical schools in France, which have attempted a practical solution of the novel problems created by the new demands of the Age.

An interesting and suggestive paper on "The Higher Education

of Mechanics for their Trades," by Louis J. Hinton, an English artisan who is a skilled worker with the chisel of the stone carver,* as well as with the pen of the ready writer, follows. Four short articles on "Technical Museums," from American and English Journals, with a tribute to the late Sir Henry Cole, from the London Times, end this appendix.

Appendix "T" comprises papers relating to Elementary and Higher Technical Training, which are mostly contributed by Professor John D. Runkle, formerly President of the Massachusetts Institute of Technology, who gives in the first paper detailed accounts of two famous European Technical Schools; The Imperial Technical School in Moscow, Russia, and the Royal Mechanic Arts School, in Komotau, Bohemia.

This paper, is followed by the report of a meeting of The Society of Arts, in April, 1881, before which Professor Runkle, gave an abstract of his observations of Technical Schools in European Countries; giving a bird's-eye view, by a most competent observer, of several of the most famous Technical Schools of Europe. Different members of the Society propounded questions, during the discussion which followed; with most interesting results.

A brief report on the work of his school, by Mr. Charles Kastner, Director of the Lowell School of Design, closes this Appendix.

Appendix "U" is given wholly to an account of European Artisan and Industrial Art Schools, opening with an official account of The Artisans School, Rotterdam, Holland, which was sent by the School Authorities to accompany the exhibit made of the work of their pupils shown at the Centennial Exposition. This is followed by a full and detailed report of several of the leading European Industrial Art Schools, made by Mr. Charles M. Carter, then of the Massachusetts Normal Art School, now of Denver, Colorado; a most competent observer and authority in matters relating to the development of Industrial Art Training.

*Since the paper referred to above was written, Mr. Hinton, after a short return to England, has become an American citizen; and has impressed upon the buildings of Cornell University, and notably within the New Capitol at Albany, lasting evidence of his skill as a sculptor, and his genius as an artist. It is of interest to know that his youthful artist son Charles Louis Hinton, has already won repute as painter, designer, and sculptor. Thus adding another example of the inheritance of the art faculty which, varying in form as it may, is alike in essence—as for example witness the author son of the famous sculptor Crawford.

Appendix "V" comprises "Papers relating to the Vienna Universal Exposition, of 1873." These consist of extracts from official reports made by the English Commissioners; The Commissioners sent by the State of Massachusetts; and the Austrian Official Reports. This notable exhibition, occurring as it did three years before the time set for opening The Centennial, was most carefully studied by Americans eager to acquire whatever information might aid in perfecting the bold experiment about to be undertaken in Philadelphia. It was also thoroughly studied by each of the authorities here quoted, with the direct purpose of ascertaining the best methods for promoting by art education, the artistic development of a People and the art industries of a Nation.

These comments by such competent students are of permanent value. They especially show the value and the use to be made of Art and Industrial Museums.

Appendix "W." This, the final Appendix of this volume, is composed of miscellaneous papers and is, in fact, a supplement to this volume of the Report; planned to bring the showing of the activities in the educational field to which this volume is given, down to the close of the year 1896. This Appendix, by itself, would make a somewhat sizeable volume. With the "Introduction," it comprises twelve divisions, some of which group together a number of separate papers. The Appendix opens, with accounts in detail of Five of the more recently founded Educational Institutes; most of which are the costly gifts made to the Community by benevolent individual citizens. These are "The Armour," Chicago, Illinois; "The Jacob Tome," Port Deposit, Maryland; "The Throop Polytechnic," Pasadena, California; "The California School of Mechanic Arts," San Francisco; and the "Thomas S. Clarkson, Memorial School," Potsdam, New York.

The interesting work recently undertaken by the Young Men's Christian Associations, in opening classes for Industrial Drawing and Elementary Technical Training, is described at length.

The recent holding of an important exhibition of "Works of Art Suitable for Decorating School Rooms," under the direction of The Brooklyn Institute, is described.

Two important papers, by Dr. Harris, on Educational and Economic Statistics follow.

Then come several papers illustrating the present activity and

rapid progress of the Manual Training Movement in the United States.

Two valuable and interesting papers on European Industrial Art Schools, by competent American observers, complete this Appendix. It is hoped that, in consideration of the fresh material herein embodied in these final pages, those who may consult this volume will have less reason than they might else have had, to regret the delay in its publication.

INDUSTRIAL AND TECHNICAL TRAINING, BOTH IN VOLUNTARY
ASSOCIATIONS AND IN ENDOWED INSTITUTIONS.

LIII

CHAPTER I.

MECHANIC INSTITUTES AND SIMILAR ASSOCIATIONS SUPPLEMENTARY TO PUBLIC SCHOOLS, IN SOME AMERICAN CITIES. PRELIMINARY CHAPTER.

The plan of the present Report—Reasons for giving the history of the several Associations from their origin to the present day, with great fullness—The gradual and continuous development of the Public School Systems clearly shown in the account of the corresponding changes which from time to time, have taken place in the purposes and methods of these voluntary Associations—These detailed histories furnish opportunities for interesting comparisons between the several Institutions—The past half century notable, as all pivotal eras have been, for the mobility of all its conditions and institutions—Transition being an essential characteristic of Life; the fuller the life the more active the transition—In such Eras all things are mobile, swayed by the mighty tides of life which mark the great onward movements of the Race—The applications of Science to Industries, in effecting manifold changes in man's environment enforces corresponding changes in his education, to fit him to meet the new conditions—Comments and suggestions of Educators freely quoted in these histories and in the Appendices—Schools of Mechanic Arts and Free Evening Drawing Schools—The preceding volume Part II was, contrary to the original plan, mostly given to Public Schools—This change in the arrangement of the Report was necessitated by the rapid progress of the Industrial Education movement in connection with public schools—The Public Schools have for some years, undertaken much which the Institutions recorded in the Chapters immediately following were first established to do—Interaction between private benevolent educational undertakings and public school systems, a feature of American Civic life—The voluntary schools have in most cases evolved into distinctive "Art" Schools or "Technical" Schools, as the case may be—Some include both departments—The purpose of giving educational advantages to pupils unable to get them elsewhere, remains the same with all—The origin and evolution of each being individual, their history is personal, characteristic and different in each case—The similar Institutions in each city are grouped together in the following Chapters—In all, it is the application of Art to Industry, and the instruction given in Drawing, which leads to their admission in this volume—In this Report the history of the Institution is given in connection with the department which is first mentioned—The Schools of this Class are grouped as follows: The Drawing Classes of the Franklin Institute; of the Spring Garden Institute; and of the St. Mark's Workingmen's Club and Institute; all of Philadelphia, Pennsylvania—The Night Drawing Classes of the Maryland Institute, Baltimore, Maryland—The Night Drawing Classes of the Society of Mechanics and Tradesmen, New York; Schools of The New York Turnverein; and of the Hebrew Technical Institute, all in New York City—The Free Night Schools of Science and Art, Cooper Union, New York City, and the Pratt Institute, of Brooklyn—The Ohio Mechanics' Institute, and the Technical School, both in Cincinnati, Ohio—The Drexel Institute, Philadelphia. The instruction in these Institutions, that is, in the Free Night Drawing Classes, tends naturally to Industry rather than to Art—These Schools are substitutes for, or complementary to, the Free Public Schools.

INTRODUCTORY.

The general plan of this Report, as fully set forth in the "Introduction" to Part I, embraces the detailed account of the circumstances attending the founding and progress of each institution whose history is given, with as full mention as possible, of the individuals prominently connected with these various movements. This necessitates the record of many details, and where the institution has had an existence during a half century or more, the giving to it of many pages. It is hoped that these histories will be found not only authentic, but sufficiently in detail, to be justly entitled to be considered authoritative and satisfactory. Not only has it been sought to give the record of facts; but, also, to show the progressive development of ideas, and how one step has led to another. The manner in which private enterprise and benevolence precede and open the way for public effort, will also be found to be repeatedly illustrated; and thus the very steps and methods by which the community progresses may be traced. This is, indeed, one of the most interesting and encouraging as well as instructive features of these histories; and could only be adequately shown by the fullness of treatment adopted.

In the details of methods of instruction, programmes of courses of study, lists of material used, etc., the purpose has been to furnish to those studying these schools, opportunities for comparison of methods.

Recognizing that, as to purposes and methods of education, the present is emphatically "a period of transition;" that the wonderful changes in the industries and surroundings of life during the last half century, largely due to the varied applications of Science to Industries, have enforced a recasting of educational methods to meet the novel conditions; and realizing, further, that few educational results that can be definitely pronounced as satisfactory, have been, as yet, arrived at; I have thought it of value to include, both in the text and in the Appendices, quotations from such addresses, expressions and statements made by leading thinkers, statesmen and writers, and by experienced educators and students of education, as would serve to set forth the results of experiments, or to offer suggestions of value, or criticisms worthy of consideration.

With this view the published official reports of the authorities of the several schools and institutions, as well as occasional inaugural and commemorative addresses, have been freely consulted and quoted.

The accounts of the various Mechanics' Institutes, Drawing schools and classes, which are given in the chapters immediately succeeding have been, as will appear, brought down from time to time, as the issue of this volume has been deferred. Since it is as impossible to recast, as it would be to rewrite, this entire Report each time that

the publication is delayed, while it seems very desirable that the latest records of the different institutions up to the date of actually going to press, should be collated and inserted; and, since some portions of this Report have been stereotyped several years in advance of other parts, a certain absence of unity and equality of workmanship, as well as want of due proportion in the attention bestowed on different institutions is inevitable. Every effort has been made to secure the fullest information possible and to give equal care to the preparation of each history, but the amount of material furnished has greatly varied.

SCHOOLS OF MECHANIC ARTS AND FREE EVENING DRAWING SCHOOLS.

As originally planned this Report was concerned with Industrial Education only so far as artistic training was included in the courses; but, as has been already sufficiently set forth in the preceding volumes, the delays in publication occurring simultaneously with the very marked development of the movement for Industrial Education pure and simple, irrespective of any artistic development, which has resulted from the successful introduction of Industrial Art Drawing in the public schools in many communities, has led to the giving of a great part of the previous volume (Part II.) to the consideration of this movement, and to a recital of its development; mostly in connection with the public school systems.

So far, then, this Report has been mostly occupied with matters relating to the public schools, and to the various efforts to provide in these for effective training both in Industrial Art Drawing and in the elements of various industries, many of which, it is true, are based upon a knowledge and practice of drawing, which last, by the most advanced promoters of the new education, is fully recognized as a very essential part of Industrial Education.

This later movement is, in fact, an effort to supply in the public schools themselves, something of the technical training which the private and incorporated schools and classes, of which an account is now to be given, were established to provide; a class of institutions which arose from endeavors on the part of benevolent individuals, or voluntary associations of public spirited citizens, to remedy the deficiencies or supplement the efforts of the public schools. While these private institutions have, from time to time, been modified by reason that the public schools have adopted their methods and so relieved them from the necessity of continuing those particular efforts, still there has never seemed to be any lack of need for the continuance of their self imposed labors in some new direction. This mutual inter-action between the public schools and these voluntary institutions, is a most interesting and suggestive feature of life in

our American towns and cities; private energy, benevolence and pity, continually pressing forward with efforts to uplift humanity and ever keeping in the van of progress; blazing the way which public effort, when sufficiently enlightened, is sure to take.

So it happens that, although the public schools are in many places undertaking the work which when this Report was first put in manuscript was wholly in the hands of the class of voluntary institutions described in this and the chapters immediately succeeding, the several Mechanics' Institutes, Night Schools and Drawing Classes, are still busy with their work of education; and, therefore, an account of them can no more be properly omitted from a work of this character now, than when it was first planned.

Their work has, in many instances, been changed; they have evolved from schools teaching the elements of an English education, into Art Schools and Technical Schools; or, from the teaching of the elements of art and artistic industries, to giving advanced Technical instruction in Art and the Industrial Arts; but their main purposes have not changed. These institutions still seek to furnish to the people practical educational opportunities which they can not otherwise enjoy, and they are thus doing a noble work in aiding the progress of humanity.

It would seem that nothing could be needed to insure their sufficient support by the community beyond a knowledge of their purposes and their efficient usefulness.

To record the names and works of their honored founders and promoters, to give a succinct history of their development and an account of their present condition, is the purpose of these chapters.

As several of these institutions have "Day Art Classes" which approach, more or less closely, to the Art Schools proper,—the Schools and Academies of the Fine Arts;—in some cases pursuing all the studies included in the curriculum of the most thorough art school; in others, including only a part of that course, but teaching such art studies as they undertake as thoroughly, and as artistically, as they are taught in any art school; it would seem perfectly proper to class these departments with the art schools; on the other hand it would be equally proper to give an account of them with the account of the institution, of which they are a part; or, to group these schools in a class by themselves. They will, therefore, be put in which ever one of these three classes may be found most convenient in arranging these volumes.

These sporadic undertakings springing up in widely separated localities and amid diverse surroundings and conditions, possess, nevertheless, certain features in common and fall naturally into related groups. Often owing their origin to a desire on the part of their founders that others should enjoy greater advantages than they themselves had possessed, or, to a benevolent wish to secure to a

class unable to attend public schools, some opportunity for acquiring the rudiments of a common English education ; or, to the natural desire of skilled mechanics that their own children should have the opportunities for acquiring practical skill in drawing, and a knowledge of the mechanic arts, which was not then given in any public schools ; these schools, which are a practical recognition of the need by all mechanics and artisans of some preliminary education in elementary drawing, form a most interesting study.

In the main, having the same purposes and adopting like methods, they are nevertheless each individual and have a characteristic personal history.

Some, during the course of their long existence have met with many changes and modifications, owing, in part, as already suggested, to the progressive development of the public schools which by affording free instruction to all in the elementary English studies have relieved these special schools of the need, formerly imperative, of including such studies in their courses ; thereby enabling them to devote more and more attention to drawing, and to definite technical instruction in various directions. This tendency towards the specialization of technical training must rapidly increase as instruction in industrial drawing in all grades of the public schools becomes more general, so that the pupils who come from them to these special schools will have already some knowledge and skill in drawing.

It is by reason of the facilities they offer for instruction in drawing and the mechanic arts,—the arts of construction,—that these institutions are here included ; some of them have as has just been stated, in addition to these drawing classes, special art departments. The history of each institution is given at some length in all cases where it has been possible to secure authentic statements.

In the arrangement followed in the chapters immediately succeeding, the similar institutions in a single city are grouped together, though in some instances, a more rigid classification would have led to a somewhat different arrangement, regardless of locality ; but, as the common purpose of affording educational opportunities otherwise unattainable to the class of pupils who attend is the same in them all, however much the individual associations and schools may differ in details, this arrangement must suffice.

As, in this Report, the history of the institution is given in connection with that department of it which is first mentioned, and, as several of these “Mechanics’ Institutes” have already had a long life, the space occupied will, of necessity, be largely dependent on the longevity of the institution.

These schools, while not confined to either development, tend strongly to the industrial side and the drawing taught is with a view to its practical application to industries, rather than with any expectation of its use in the so-called fine arts, except in the special art

classes already referred to, though many of the pupils find profitable employment in the decorative arts.

The account of these institutions begins naturally with that of the oldest in the country, the Franklin Institute of Philadelphia. The Maryland Institute of Baltimore which was founded but a year later, would strictly be grouped in more immediate connection with it, as would also the Society of Mechanics and Tradesmen of New York, and the Ohio Mechanics' Institute of Cincinnati, with, perhaps, Cooper Union of New York, and The Pratt Institute of Brooklyn; though the two latter, as they are each the outcome of individual benevolence, differ essentially in their origin, from the other co-operative institutions, while closely allied to them in their main purposes.

The Drexel Institute of Science, Art, and Industry, the gift of Anthony J. Drexel to the community, opened in Philadelphia with brilliant inaugural ceremonies, on December 17th, 1891, is the latest comer of these desirable institutions. Kindred in origin and purpose to Cooper Union and the Pratt Institute, yet, under the fostering care of Mr. Drexel, Mr. George W. Childs, and their fellow trustees, and guided by the wise direction of President James McAlister, it gives promise of a characteristic individual development, in which we may expect the Art features to largely predominate. With its artistic building, its admirable equipment, its generous endowment and its high aims, a future of great and growing usefulness is fairly to be anticipated for this most promising institution. Philadelphia now, including as it does in the Franklin and the Drexel the oldest and the youngest of these technical schools of the people, affords an unusual opportunity for studying the trend of popular educational development during the present century.

Though so similar in their inception and motives, the development of each one of these kindred entities has been so individual that, to-day, they have no closer bond of union than those of the other institutions which are here grouped by neighborhoods. The tendencies of the Franklin Institute, for example, have been less and less to develop in the direction of schools, but increasingly towards the development of science and inventions. The activities of the Maryland Institute, on the other hand, tend more and more towards the education of students, which latterly absorbs most of its efforts.

A like individuality is shown by each of the others whose histories are here set down, so that not the least interesting feature of these records is the opportunity thereby given, while tracing the causes and progress of their several developments, to mark how the initial impulse, the early surroundings, and the changed environment brought about by the development of the community in later years, have impelled, modified, and changed their very purposes, as well as their methods. In these instances we may see how the character of institutions, as well as of individuals, is affected by the times in which they live and by the conditions of their environment.

CHAPTER II.

MECHANICS' INSTITUTES AND SIMILAR ASSOCIATIONS IN THE CITY OF PHILADELPHIA, PENNSYLVANIA.

The Franklin Institute—Origin and History—The Pioneer of its class in the United States—Founded in 1824 by Mr. Samuel V. Merrick and others—Historical Address by Hon. Frederick Fraley delivered on February, 6th, 1874—Fiftieth Anniversary of the Institute—Letter written by Mr. Merrick in 1866—His application for membership to a Mechanics' Mutual Improvement Association being rejected; he is prompted by a friend, Wm. H. Kneass, to organize a different Institution—The Andersonian Institute of Glasgow, is, in part, the model of the new Institute—Organization effected at a large public meeting of citizens held February 5th, 1824, and presided over by Mr. James Ronaldson, then the leading type founder of the country—Plan devised by Mr. Merrick aided by Professor Keating and a few friends, presented to meeting by Peter A. Brown, Esq., a leading member of the Bar—Plan approved in a letter from Nicholas Biddle, Esq.,—Society organized and, at first election of officers February 16th, numbered nearly five hundred members—List of names of first promoters—Professors of Chemistry, Natural Philosophy, Mechanics and Architecture appointed—History and purposes of the Institute summarized in Public Ledger article October 23rd, 1873—Charter and By-Laws amended April 25th, 1864—Analyzed and quoted from—Educational work of the Institute—Mr. Fraley's tribute to the aid given to this association of Mechanics, by Professors of the University of Pennsylvania—Other brilliant Addresses on Fiftieth Anniversary; by Professor Robert E. Rogers of the University reciting work of this Institute—by President Henry Morton of Stevens' Institute of Technology, Hoboken, New Jersey, and by Mr. Coleman Sellers, President of the Franklin Institute—Features of the Institute—The Lectures—The Library—The Collections; of geology, and minerals, and of models of machinery—The Journal—Public Exhibitions—Address of the Board of Managers offering prizes for the Fiftieth Anniversary Exhibition—That exhibition a great success—History of this Memorial Exhibition—List of Committees—Close of the Exhibition—Address by Coleman Sellers, Esq., President of the Institute—A review of the progress of the Arts and Sciences—List of Officers for 1874—International Electrical Exhibition 1884—Origin of the Exhibition—Site for the building—Classification of Exhibits—Educational influences—Visits of Schools—Lectures—Publication of "Primers of Electricity"—Summary of visitors and of financial results—More than a quarter of a million of visitors—Report of Committee on Bibliography—Special Historical Exhibit made by United States Patent Office—Exhibits made by other Government Departments—Brilliant displays in lighting Building and Grounds—United States Electrical Conference—General Report by Charles H. Banes, Chairman of Committee—List of Officers for 1884—List of members of Committees in connection with the Electrical Exhibition—Account of Annual meeting January 20th, 1885—President Tatham's statement—Annual meeting January 29th, 1887—President Bane's statement regarding the "Novelties Exhibition" of 1885—The Institute Building—Description given in Bulletin of the Electrical Exhibition—Educational Features of the Franklin Institute, their evolution

and changes traced—Drawing Schools established in 1824—Reorganization—Plan prepared by Committee—Membership—Number of members at close of 1887, 2,155—Committee on Instruction—Influence exerted by the Franklin Institute during its long career—Its relation to the Capitol at Washington, and to the establishment and development of the Patent Office—List of members having American and European scientific reputation—The Drawing School established the first year of the Institute and the School of Design for Women founded by it in 1850, entitle this Institute to distinguished mention as a pioneer in Industrial Art Education—It is to be credited also with initiating the movement which culminated in the holding of the Centennial Exhibition in 1876—List of the Presidents, Secretaries and Actuaries of the Institute since 1824—Membership and Financial Statement for 1890—List of Officers and Managers for 1891—The Drawing School of the Franklin Institute—Founded simultaneously with the Institute—Methods modified with progress—At first confined probably to Mechanical drawing—Definite returns obtained in 1874—Four Teachers and two hundred and fifty pupils then in attendance—pupils mostly women and girls—Changes in attendance largely owing to opening of other Art Schools and classes in the city—A running history of the School compiled from the brief notices in the Annual Reports of the Board of Managers of the Institute—Mr. William H. Thorne, appointed Director of the School—Extracts from his Reports from 1882 to 1891—Spring Garden Institute—compared with Cooper Union of New York City—Incorporated April 12th, 1854—Constitution amended 1881—List of original Incorporators—Provisions of memberships Constitution and By-Laws—This Institute closely resembles the Franklin Institute—Two classes of Schools—The Drawing Schools and the Technical Schools; the latter closely akin to the typical Manual Training School—Historical account of the Institute—Membership—Work—The late Mr. John M. Ogden was the first president and held that position for thirty years—Account of the work and resources of the Institute from Annual Reports—A new departure taken in 1878—A successful Cooking Class opened in 1880-'81—In 1882-'83 the Mechanical Handiwork Department was greatly developed under direction of Lieut. Robert Crawford of the U. S. Navy detailed to that duty by President Arthur—The Drawing and Handiwork Schools were both very largely attended this year, and the Library and reading room used by many readers—Drawing Schools largely increased the next year—Lieut. Crawford resigns in 1885-'6 to take directorship of the City Manual Training School and is succeeded by Mr. Arthur L. Church—Report for year ending June 30, 1887 shows continued prosperity—Exhibition of pupil's work May 17th, 1887—List of Officers 1887-'88—Extracts from Annual Reports from 1888 to 1891, inclusive—List of Officers for 1891-'92—The Night Classes in "Drawing" and in Mechanical "Handiwork"—Drawing Schools opened in 1878—School rooms refurnished in 1880—Three hundred and fifty-eight pupils—A running history of the classes compiled from the Annual Reports—Changes and improvements recorded in 1882-'83 report—Prospectus of Night Classes 1883-'84—Statistics of attendance—Address May 1886 by Superintendent James Mac Alister on "Art and Mechanical Education"—Abstract from Principal Porter's report of June 30th, 1887—The Night Classes in Mechanical Handiwork—Quickly followed by a Day Manual Training School—The Night Drawing Classes in like manner led to the opening of a Day Art School—Mechanical Handiwork Classes first mentioned in Twenty-ninth Annual Report (1879-'80)—Begun that year—Thirty pupils the second year—one hundred and fifty-eight pupils attend the third year—Programme of studies given in prospectus for 1883-'84—Statistics quoted from Annual Reports of Institute—List of Committee on Mechanical Handiwork for 1887-'88—Day Mechanical School closed in 1891—List of Committee for 1891-'92—St. Mark's Workingmen's

Club and Institute—An interesting institution founded in 1870—with Library, Lecture room, Reading room—Musical and Literary entertainments—Free Instruction Classes similar to those of Cooper Union and with Drawing Classes—Appeal for industrial training of working men—List of Officers of Club 1873-'74—Report for 1882-'83—Growth of Club—New Club house—Drawing Classes founded by Mr. H. Dumont Wagner, Secretary of the Pennsylvania Museum and School of Industrial Art, closed by reason of his removal to Chicago—Other classes given up when City opened free public Night Schools—List of Officers 1883-'84.

THE FRANKLIN INSTITUTE, PHILADELPHIA, PENNSYLVANIA—DRAWING CLASSES.

HISTORICAL STATEMENTS.

The Franklin Institute for the promotion of the Mechanic Arts, the first of its class established in the United States, was founded in 1824, as the result of a meeting called by Mr. Samuel V. Merrick, who was made its secretary, Mr. Thomas Fletcher presiding.

In a most interesting historical address delivered on the evening of February 6th, 1874, by the Hon. Frederick Fraley, then treasurer of the Institute, on the occasion of its Fiftieth anniversary,* many particulars of the causes that led to its establishment and of its progressive development, are recorded. From these it appears that it was, primarily, due to the efforts of Mr. Merrick, then a young man of twenty-one years of age, who, having been trained for mercantile life found himself, with no previous knowledge of mechanics, in a position where such knowledge was indispensable to success.

In a letter to Mr. Fraley written in 1866, in which he recalls the past, he says: "that owing to circumstances he became an owner of a workshop, without a mechanical education, with scarcely a mechanical idea.

On contemplating the position thus assumed I was made aware of two facts: that without knowledge I could not succeed, while it was too late again to go to school; and, secondly, that as a mechanic, I was socially degraded; for in those days, as people despised mere mechanics, my own position shared that of my class."

The immediate spring of action was his rejection from a mutual improvement association of mechanics, who possibly thought that, as he was confessedly not a mechanic, he lacked the one essential qualification for membership.

His friend Mr. Wm. H. Kneass, a distinguished engraver, who had proposed his name and was annoyed at its rejection, jestingly suggested that he should organize an institution of his own.

* Commemorative Exercises at the Fiftieth Anniversary of the Franklin Institute of the State of Pennsylvania for the promotion of the Mechanic Arts, held on Friday evening, February 6, 1874, at the Musical Fund Hall, Philadelphia: Hall of the Institute, Seventh street below Market street, 1874, pp. 96.

This suggestion, though not seriously made, was fruitful; and the account of young Merrick's perseverance under discouragement after his adoption of the idea, goes far to explain any success in private or public affairs subsequently achieved by him. Through Mr. Kneass, he was brought into acquaintance with a young enthusiastic professor in the University of Pennsylvania, who had a little before, been appointed to the then novel professorship of "Chemistry in its application to Agriculture, and the Mechanic Arts." Professor Keating, had the year before made a futile attempt to establish a somewhat similar society.

He heartily seconded Mr. Merrick, in his plans and gave him an account of the "Andersonian Institute" of Glasgow,—after which the new society was ultimately modelled in some respects.

The two young men succeeded in getting three or four others, who met formally and organized, as before recorded. They appointed a committee to prepare a plan and call a meeting—the preparation of plan, constitution, etc., was entrusted to Mr. Merrick. The young men addressed written invitations to some twelve or fifteen hundred of the leading citizens, to meet at the county court house, on the evening of February 5th, 1824. A large meeting assembled. Mr. James Ronaldson, then the leading type founder in the United States, was chosen to preside. Peter A. Browne, Esq., a distinguished leader of the Bar, stated the plan and purpose of the proposed institution, and ably urged its formation,—others followed;—a letter of approval was read from Nicholas Biddle, Esq., then in the height of his power. The constitution was adopted. Lists of memberships were circulated. A committee was appointed to nominate candidates for offices and managers, and to take the needed order for holding an election on the 16th of the same month. By the time of holding an election of officers, between four hundred and five hundred members were enrolled. Mr. Ronaldson was elected president. A board of managers was chosen; of which, as a matter of course, Mr. Merrick and Professor Keating were members; standing committees on Instruction; on Invention; on Premiums and Exhibitions; on the Library; and on Models and Minerals; were appointed and took hold of their duties with zeal and earnestness. Professor Keating, was appointed Professor of Chemistry, Professor Robert M. Patterson, of Natural Philosophy and Mechanics, and William Strickland, Esq., of Architecture.*

* The following names of the first promoters of the new society are recorded in Mr. Merrick's letter and Mr. Fraley's address.—Matthias W. Baldwin, Peter A. Browne, Esq., Oram Colton, Thomas Fletcher, Dr. Robert E. Griffith, Professor Wm. H. Keating, Wm. H. Kneass, David A. Mason, Samuel V. Merrick, James Ronaldson, James Rush, George Washington Smith, Esq., M. T. Wickham, and Samuel R. Wood.

THE PURPOSES AND HISTORY OF THE INSTITUTE SUMMARIZED.

The objects of the Institute were the promotion of Science and the Useful Arts—*

First, by the delivery of lectures on the arts and the application of science to them; second, by the formation of a library of books relating to science and the useful arts, and the opening of a reading room; third, by the examination of all new inventions and discoveries by a committee of learned and honorable men; fourth, by the publication of a journal to contain essays on science and art, specifications of English and American patents, etc.; fifth, by holding exhibitions of American manufactures and awarding medals to worthy workmen; sixth, by building a hall for the meetings of the Institute and the use of the members; seventh, by collecting machines, minerals, materials, etc., used in the mechanic arts; eighth, by the establishment of schools in which should be taught architecture and *mechanical drawing*, chemistry applied to the arts, mechanics, and, if possible, of a high school for giving young men a liberal and practical course of education.

Immediate measures were taken to put in operation all the means for promoting the mechanic arts indicated above. The first courses of lectures were delivered in the Academy, on Fourth street, by Robert M. Patterson, William H. Keating and William Strickland, on such subjects as natural philosophy and mechanics, architecture and civil engineering, chemistry and mineralogy.

In 1826 an act of incorporation was obtained and in the same year Dr. T. P. Jones, Professor of Mechanics, established the Franklin Journal, which was purchased by the Institute in 1828, and the name changed to "Journal of the Franklin Institute."

Dr. Jones, was in that year made Superintendent of the Patent Office at Washington, but continued to edit the Journal. In it were published the specifications of American patents, and these were regularly published until the Patent Office commenced to issue reports. The Journal contains the only complete list of American patents that was ever published, and since the Patent Office was destroyed by fire the only list in the world. * * * * *

In 1850 a School of Design for Women, now a separate institution, was established by the Franklin Institute, at No. 72 Walnut street. The whole number admitted to the school during the first year was 94, and 54, remained at the close of the year. * * * * *

The Institute first proposed an exhibition in honor of the National Centennial, and drafted the act creating the Centennial Commission; afterwards endorsed by the Legislature and adopted by Congress. These public works, although they are from their character the most prominent, form by no means the best claim of the Institute to public gratitude. Daily and nightly for nearly half a century, the every-day work of educating young men has been successfully carried on. The number of active members now in the Institute is 1300.

There are about 16,000 volumes in the library almost entirely of a Scientific or Technical character and embracing many periodicals and proceedings of learned societies. Between thirty and forty lectures are delivered in the hall of the Institute each winter on various technical subjects. The drawing school is largely attended, as many as 250 pupils being present during the winter. It is open for six

*This summary of the objects of the Institute and of the historical items, appeared in an article in the Philadelphia "Public Ledger" of October 23d, 1873. It seems to have been a preliminary abstract from the address of Mr. Fraley.

months in the year, and instruction is given in mechanical, architectural and general drawing. The Journal, has become to the engineering and technical profession of the country a standard work of reference; and through it, the Institute is kept in correspondence with most of the learned societies of Europe.

THE CHARTER AND BY-LAWS.

The charter, first obtained in 1824, was amended April 25th, 1864.* The amended charter, recites the objects of "the said corporation," as summarized substantially in the extracts given from the article in the Ledger.

The Institute is empowered to hold real estate, not to exceed a yearly rental value of ten thousand dollars. Section 4 of the charter thus defines the membership :

SEC. 4. The members of the said corporation shall consist of manufacturers, mechanics, artisans, and persons friendly to the mechanic arts, and of such stockholders in said corporation as may, by the by-laws, be entitled to the privileges of members; and every member shall pay such sum for an annual or life subscription as the by-laws of said corporation may require; and honorary and corresponding members may be elected at such times, and in such a way, and with such privileges as said corporation may deem expedient.

All necessary powers are conferred on the corporation, and its management, it is expressly stated, is to be fixed and regulated by by-laws to be adopted at the first monthly meeting after the acceptance of this amended charter—the by-laws to contain provisions for their own alteration and amendment, which provisions are to be strictly observed.

Article I. of the By-Laws provide that the rent and personal estate of the Institute shall be valued at sixty thousand dollars, to be represented by six thousand shares of stock of par value of ten dollars each. This stock, purchasable at par, is divided into two classes; the first class is subject to no annual payment and confers no privilege of membership, but by payment of one dollar a share the holders, of legal age, may vote at elections of officers on each share. Certificates of the second class, registered for use, pay an annual due to the Institute of three dollars per share and entitle the holder to every privilege of full membership.

The ten sections of Article I. contain various provisions for the forfeiture of stock, for the buying in of stock by the Institute, and for increased issues of stock as value of property increases.

Article II. treats of "members," sections one and three; define the requisites of membership. The seven sections contain various provisions affecting the rights, duties, and privileges of members.

* Charter and By-Laws of the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts.—Philadelphia : W. P. Kildare, Printer, 734 and 736 Sansom Street, 1875, Pp. 30.

Article III. treats of payment of dues, in four sections.

SEC. I. Every member, other than a holder of Second Class stock, shall pay an annual contribution of *Five Dollars*; but the payment of *Fifty Dollars* within any one year shall constitute a member for life, with an exemption from all annual payments. * * *

Section 4. provides that a "holder of ten shares at once, in his own name, shall be entitled to all the privileges of membership and exempt from annual fees."

Article IV. defines the officers of the society as follows :

The officers shall be a President, three Vice-Presidents, a Secretary, a Treasurer, twenty-four Managers, and three Auditors. Two-thirds of the Managers shall be manufacturers or mechanics.

Article V. treats of elections.

SEC. I. An election for officers shall be held on the third Wednesday in January in each year. At this election, the President, the Secretary, and the Treasurer, shall be elected to serve one year, and one Vice-President, eight Managers, and one Auditor shall be elected to serve for three years; provided, that the officers now elected, or who may hereafter be elected, shall continue to serve until their successors be elected. No person shall be allowed to vote unless all his arrears are paid.

SEC. 2. All elections for officers of the Institute shall be by ballot.

The third and last sections define the manner of holding elections. Article VI. defines duty of President. Article VII. describes the qualifications and defines the duty of the Secretary, as follows :

SEC. I. The Secretary of the Institute shall be a person of scientific and literary attainments, and shall receive such annual compensation for his services as may be fixed by the Board of Managers.

SEC. 2. His duties shall be to receive members and strangers visiting the Institute; to take charge of the Library, Cabinets, and other property of the Institute under the direction of the various Committees and Curators; to present and read at each meeting of the Institute a statement of such scientific discoveries, mechanical improvements, or novelties in the arts or engineering, as he may deem of interest to the members; and to perform such other duties as he may deem advisable to promote objects of the Institute, or such as may, from time to time, be designated by the Institute. He shall also answer all letters addressed to the Institute, except those relating to stock, finance, or of a business character; open and maintain such correspondence as may promote its interests; notify honorary and corresponding members of their election, and Committees of the Institute of their appointment and acknowledge all donations to the Library or Cabinets in the *Journal*, and to the donors thereof at his discretion. He shall report, or cause to be reported, the proceedings of the Institute, and shall deliver the report thereof, or an abstract of it, to the editor for publication.

Sections 3. and 4. provide for a *pro tempore* appointment by the President, of a Secretary, in case of need; and places the appointment and control of Janitor, and Librarian, in the power of the Secretary.

Article VIII.—"Treasurer." Article IX.—"Auditors." The succeeding Article X. is interesting as showing the complex nature of the Institute, which is thus seen to represent rather a congeries of

separate Institutes, than a simple organization. This article contains fourteen sections, providing for the formation and government of these diverse bodies; which are, at once, independent and self governing, yet, in a general way, subordinate to the main body of the Institute.

The sections quoted, define the nature and powers of these subsidiary organizations; the sections omitted, embody details, of interest only to members.

ARTICLE X.—*Organization and Government of Sections.*

SEC. 1. For the promotion and encouragement of manufactures and the mechanic arts, as well as of the sciences connected with them, members of the Franklin Institute may form Sections and hold meetings in the Hall, or such other rooms as may be provided for them by the Board of Managers. These Sections shall be constituted as hereinafter provided, and shall have precedence in the order of their formation.

SEC. 2. Any number of members, not less than twelve, may constitute a Section.
* * *

SEC. 5. Every member of a Section shall pay to its Treasurer an initiation fee and an annual contribution such as may be determined by the Section in question, provided that the amount of either shall not exceed the sum of two dollars (\$2) in any Section.

SEC. 6. The officers of each Section shall be: a President, one or more Vice-Presidents, a Recorder, a Treasurer, a Corresponding Secretary, and one or more Conservators, who shall be elected by its members at its first meeting, and subsequently at the first meeting in January each year. * * *

SEC. 7. Each Section shall make its own By-Laws not inconsistent with the Charter and By-Laws of the Franklin Institute; control its own funds, and pay the expenses peculiar to the Section. The Institute shall not be responsible for debts contracted by any Section, or by any officer or member thereof.

SEC. 8. Members, corresponding members and honorary members of the Institute shall be entitled to attend the meetings of any of its Sections, but not take part in the discussion or business of the Section, except under such rules and provisions as the Section may make. * * *

SEC. 11. Each Section shall submit to the Institute, at every stated meeting, the record of its proceedings for the month, a written summary thereof to be engrossed in the Secretary's Report.

SEC. 12. Papers read before any Section, and approved by the same, shall be referred to the Committee on Publications of the Institute, and if accepted by them, shall be published in the *Journal of the Institute*.

Article XI. treats of Committees.

SEC. 1. There shall be the following Standing Committees, each to consist of ten members, to be appointed by the President, at the first meeting after the annual election, who may be aided in his choice by nominations made at the annual meeting. All members notified of their appointment to any committees, if they do not decline before the next stated meeting, shall be considered members thereof.

1. On the Library.
2. On the Cabinets of Models.
3. On the Cabinet of Minerals and Geological Specimens.
4. On the Cabinet of Arts and Manufactures.
5. On Meteorology.
6. On Meetings.

SEC. 2. There shall be a Committee on Science and the Arts, which shall consist of such members of the Institute as shall voluntarily enroll their names as members thereof in a book to be provided for the purpose, and who will, by enrolling their names, pledge themselves to perform such duties (to be therein described), as may devolve upon them, and to sustain, by their labors, the scientific character of the Institute.

The Committee shall, within one month after the annual meeting of the Institute in each year, hold a meeting at which they shall elect a chairman and adopt rules for their government, not inconsistent with the By-Laws of the Institute. Sub-committees to examine any subject shall be appointed by the chairman, and shall make their reports in writing, signed by the members thereof. It shall be the duty of the chairman to submit to the Institute, at its stated meetings, such reports of sub-committees, when approved by the general committee, as he may deem of interest to the Institute, and such reports, when published, shall have attached to them the signatures of the sub-committees making them.

Applications for the examination of any subject shall be made to the Chairman of the Committee, either by the Institute, or by the Secretary, who shall receive such applications from inventors and others.

Section 3, directs election of chairman, and that the committees on "Library," "Meetings," "Science and Arts," meet monthly, at least, the others at call of chairman; all shall keep records, and report to Institute.

Section 4, the final section, guards against payment of any bills for expenses of committees unless made out and certified to in due form.

Article XII. is as follows :

SEC. 1. The Institute shall hold stated meetings on the third Wednesday of each month, excepting in July and August. That on the third Wednesday in January of each year shall be styled the annual meeting.

SEC. 2. Special meetings shall be called by order of the President, upon request of the Board of Managers, or the written application of twelve members of the Institute. Fifteen members shall constitute a quorum.

Article XIII. designates "Order of Business."

Article XIV. "Rules."

Article XV. "Board of Managers."

SEC. 1. All the officers of the Society, except the Auditors, shall be *ex-officio* members of the Board, to which shall be confided all matters of finance, all affairs of the Institute not immediately connected with scientific subjects, or with the mechanic arts, with authority to devise and execute all measures which may advance its interests, and to elect members of the Institute, except Honorary and Corresponding Members.

SEC. 2. The Board of Managers shall keep regular minutes of their proceedings, which shall be open at all times to the inspection of members of the Institute.

SEC. 3. They shall, at the annual meeting of the Institute, present a report of their proceedings and of the condition of the affairs of the Institute.

SEC. 4. They shall hold stated meetings once in each month. They shall select their own officers, except the chairman, who shall be the President of the Institute, and shall be at liberty to make by-laws for their own regulation, not inconsistent with the Charter, or with the By-Laws of the Institute. Seven of their members shall constitute a quorum.

SEC. 5. All vacancies in the Board of Managers shall be filled at the next stated meeting of the Institute.

The last article, the XVI. provides for "Amendments."

The By-Laws of the Board of Managers are comprised in ten sections providing for "Officers," "Meetings," the appointment of an "Actuary," whose very comprehensive and multifarious duties are defined; for two "Curators," who have charge of all property of the Institute, except certain records, papers and books in hands of designated officers; "Professorships," "Order of Business," and "Amendments."

The remaining three sections, 2, 6, and 8, are here given:

SEC. 2. *Meetings*.—The Board shall hold a meeting for the purpose of organizing, appointing an Actuary, Standing Committees, &c., on the fourth Wednesday in January, and regular meetings on the second Wednesday of each month at eight o'clock, P. M. * * *

SEC. 6. *Standing Committees*.—The following Standing Committees, consisting of five members each, shall be appointed by the President and approved by the Board:—

1. On Instruction.
2. On Election and resignation of members.
3. On Stocks and Finance.
4. On Publications.
5. On Exhibitions.
6. On Sectional Arrangements.

It shall be the duty of these committees to keep regular minutes of their proceedings, and report them monthly to the Board. * * *

SEC. 8. *Professorships*.—There shall be Professors of Chemistry, Natural Philosophy, Mechanics, and other departments, as the Board of Managers may direct: to be elected by the Board, and to receive such compensation as the Board may from time to time, determine.

EDUCATIONAL WORK OF THE INSTITUTE.

Mr. Fraley, in his commemorative address, thus records the direct educational work of the Institute, preceding it by graceful recognition of the credit due to the University Professors for their long and willing coöperation in the work of the Institute, as follows:

TRIBUTE TO THE UNIVERSITY.

And here I may be permitted to pause and say a word about the University of Pennsylvania, and its ancient and continued interest in and aid to the Institute. Profs. Keating and Patterson both held chairs in that Institution, when they were called into our service, and from that day to the present time our relations to the University have been cordial and complete, for of her gifted Professors we have had, in addition to those already named, Alex. Dallas Bache, John F. Frazer, Henry Reed, and Roswell Park, and from her Medical Department, Professors Hare, James Rogers, and Robert E. Rogers.

THE LECTURES.

The first course of lectures was delivered in the old Academy building, on Fourth, near Arch Street, belonging to the University of Pennsylvania; the use of the building being granted to us by the trustees. In addition to the lectures on the subjects above named, there were a number of volunteer lectures, delivered by

members of the Institute, on various subjects connected with science and the arts.

The foundations thus laid for instruction were rapidly enlarged, and to those like myself, who have been of them and in them for half a century, their proportions and usefulness have been really wonderful.

TECHNICAL DRAWING SCHOOL OPENED.

Soon a school, in which should be taught architectural and mechanical drawing, was established, and it was rapidly filled with pupils. Among the earliest of these was my friend, who is now sitting on the platform, almost as venerable-looking as myself, Thomas U. Walter, Esq., then a bricklayer, but, thanks to that school, afterwards the accomplished and successful architect of the Girard College, then Professor of Architecture in the Institute, and finally commending himself and his works to posterity as the architect of the Capitol at Washington.

AN ENGLISH HIGH SCHOOL OPENED.

But, not content with this special school, the Managers determined to establish another, in which all the useful branches of English Literature and mathematics, and the ancient and modern languages should be taught: in short, a high school. This was placed under the charge of Walter R. Johnson, Esq., with able assistants, and was soon filled with pupils. The Drawing School has been very successfully continued down to the present day, and is now more flourishing than ever before, but the High School was discontinued after a few years' time upon the resignation of Mr. Johnson. By this time the public schools of the city had been much improved by the introduction of new methods of instruction, and the establishment of the Central High School of Philadelphia supplied all the needs that our High School was intended to provide for. The Department of Instruction, with various changes and enlargement of the features, has continued in successful operation down to the present time. Its Professors of Chemistry have been W. H. Keating, Franklin Bache, John K. Mitchell, and John F. Frazer, men who were remarkable for the extent of their knowledge, and whose names are identified with the scientific reputation of our city. With the same honorable and enduring notice we place here the names of our Professors of Natural Philosophy and Mechanics, Robert M. Patterson, Thomas P. Jones, Walter R. Johnson, and John C. Cresson. My space will not permit me to name all their successors, who, taking up their mantles, have won, and are continuing to win, laurels in the same field. Nor can I begin to make a list of those who have contributed by valuable lectures to fill up more effectually the measure of useful instruction that we have diffused. But I see one of them now near me, the venerable Dr. Gouverneur Emerson, who fully forty years ago delivered a course on meteorology—the first of that character, probably, in this country, and who since then has kept up his interest and knowledge of that important part of atmospheric science, and has lived to witness, in the establishment of the Signal Service Bureau of the United States, the recognition and utility of the infant science he was then aiding in ushering into life.

Mr. Fraley, then recounted at length, the services rendered to science, and to inventions, through the instrumentalities of the Institute; briefly summarized in the extracts given in the preceding pages from the Ledger article; and paid fitting tribute to the members who were prominent in these good works. He was followed by other speakers as given in the programme; the whole forming a very brilliant exemplification of the high scientific attainments acquired by former members.

In an admirable address, Dr. Robert E. Rogers, Professor in the University of Pennsylvania, and Vice President of the Franklin Institute, tersely recited the progressive steps in Science, and the Arts, which had been taken during the fifty years since the founding of the Institute,—a striking résumé of the world's progress. He closed with the following reference to the work of the Institute :

Did time permit, I would attempt to recall to your minds in detail, however imperfect the effort, wherein this Institute has done its part, but to do this I should weary your patience. I will, therefore, simply refer to the experiments it has conducted in the investigation of the strength of materials; to its careful search into the causes of steam-boiler explosions; to the numerous reports of its committees upon matters within its province; to its library of valuable scientific and practical works for consultation; its collection of minerals and models, the one a help and to give incentive to the study of an important practical branch of natural science bearing upon mining interests, the other facilitating inventive talent; to the courses of instructive lectures delivered during each winter upon physics, chemistry, geology, and other scientific and practical branches; to its monthly meetings for the reading and discussion of papers upon science and the arts, and the exhibition of novel inventions; and then to those unseen but deeply felt influences which it has exerted, in aiding seekers after information in various directions of thought, by guiding them to persons and authors best capable of supplying their wants.

I would refer also to its Drawing School, where large numbers of young men and women nightly resort, for the acquirement, under able instructors, of that art so valuable in almost every walk of life.

And, lastly, to its Journal, the *pioneer* reporter of the mechanic arts in this country, which, keeping pace with the progress of science and industry, is to-day a living representative of many of the largest interests of our country. With such a record of the past, may not our Institute anticipate yet brighter prospects in the future, and should we not all exclaim in earnest words, "*Esto perpetua.*"

Professor Henry Morton, President of the Stevens Institute of Technology, Hoboken, New Jersey, formerly "Resident Secretary" of the Franklin Institute, then gave a brilliant address, the underlying idea of which was that all the phenomena of Nature are the result of matter in motion. He said:

LADIES AND GENTLEMEN: In discussing my theme this evening I propose to begin at the beginning, and set out from the very origin of the subject, and yet, so rapid are our modern modes of thought as to travel that, if we do not run off the track, ten minutes will easily see us safely arrived at the end of the matter.

My first proposition is a brief though comprehensive one. It is simply this. Ladies and gentlemen. The earth moves! And though as I perceive you are not electrified by this important statement, I yet hope within a few minutes to show you that, taken in its full and true significance, this assertion may be as wonder-exciting now, as in its simpler meaning it was two hundred and fifty years ago, when a Galileo only dared to say it in a whisper.

At the present time we have gone far beyond being surprised to hear that the fixed and solid earth is not the stationary centre of the universe, and are not even made giddy when we think that it is spinning at a rate of about 1,000 miles an hour (for the equator), and flying around the sun with a velocity of 1,000 miles a minute, or about 1,000 times faster than an express train behind time. We are not even shocked to learn that, besides these two motions, our earth, as part of the

solar system, is on its travels through space in an unknown path at an unknown rate ; or as it may be otherwise expressed, is one of the planetary lambs which the sun-shepherd is leading through the celestial fields, browsing as they go on such shooting stars, meteors, or comets as may come within their reach. Familiarity has enabled us to accept as perfectly commonplace and natural, all these ideas of instability and motion, and we now would only be astonished if some one were to say to us that the world *did not* move.

Aggressive science, however, which is itself never willing to rest, but makes each advance only a new base for further progress, will not leave us even here, but points us to an entirely different class of motions and says : Not only does the world and every object in the universe move, but *it is the motion of all matter which gives it those properties by which we recognize it.*

In other words, if the matter of the universe were to be brought to a state of rest, it would no longer be the universe, it would no longer be matter as we can comprehend that idea ; or in yet other words, matter is matter, the universe is the universe as much by reason of the motion of its individual atoms as by reason of their actual existence.

Example is better than precept, and I will therefore take a case and give you two views—the external or artistic, and the interior, or scientific of the same scene.

We are in a valley among snow-capped mountains, and before us a lake spreads its mirror to the sky.

No breath of air ripples its surface, no wavelet breaks upon its beach, nothing is there but absolute repose. So says the artist, and painting such a scene he calls his picture "Silence," "Repose," "The Lake of Dreams," or some such appropriate title.

Now, however, let us look at that same scene with eyes touched by the wand of science, and opened to see beneath the surface of things. What do we then behold? Is there any longer an impression of repose? Of rest? Of sleep?

Look at that mass of water with its mirror-like surface. We see there a perfect Sebastopol of flying missiles, water atoms hurled in clouds from the surface into the air, water atoms hurled back from the air into the water surface. It is by such action as this, science shows us, that evaporation takes place, or the invisible though rapid passage of the liquid water into the viewless air.

The whole mass of the water is likewise thrilling through with those heat motions, of which if deprived partially, it would freeze into ice, and if robbed utterly, would shrink into some formless horror, of which even the imagination of science can form no picture.

We turn now to the breezeless air, and here again we see that it is air, and not some densest solid, or nameless nonentity, only because of the ceaseless flight of its countless molecules, which, rebounding, jostling, ricocheting, glancing, but ever on the wing of motion, make it the light, elastic fluid which we know as air.

And if we next turn to the towering rocks and snow-capped peaks, we will find the same conditions in a modified form. All undoubtedly thrill with the quick heat-pulse which is the very soul of matter, and in probability owe their distinctive characteristics to peculiar modes of motion among their atoms.

But it is needless to go further in this direction. It is evident that in the view of science the "universe of matter" is *as* truly the "universe of motion."

Realizing this fact, is there any evident deduction to be drawn that bears upon the object which has brought us together this evening?

Placed as rulers and as student of this universe of matter in motion, and becoming rulers and masters of its resources just in proportion as we are apt and faithful students, what is the branch of study to which we should most devote our attention? Evidently that which treats of matter in its relations to motion, and this subject I need hardly say is known by the name of Mechanics, and is that to the

development of which the Franklin Institute has directly and indirectly contributed for the last fifty years.

That you may not suppose I have laid undue stress upon this point, allow me to quote a few words from a late enunciation of one of the greatest students of science, Helmholtz. "If, however (and the previous context gives these words the force of, as therefore), motion is the primordial change which lies at the root of all other changes occurring in the world, every elementary force is a force of motion, and the ultimate aim of physical science must be to determine the movements which are the real causes of all other phenomena, and discover the motive power on which they depend; in other words, to merge itself into mechanics."

We may then fairly say that, in its relations to the universe at large, and to man's knowledge of those material surroundings on which his prosperity so largely depends—the work of the Franklin Institute, founded "for the promotion of science and the mechanic arts," has been a noble one judiciously directed!

We may, however, well ask if there is any reason why at this particular time, at this special epoch in the world's history, such a subject should be more than ever appropriate and desirable?

The comparison of national growth or human progress with the development of a child, is of course familiar, and has been frequently suggested, but is none the less apt and fruitful in valuable indications.

Thus we see in the infant, or in the infancy of the human race, at first only physical growth and development, the strength and muscular powers of the savage and of the barbarous nation.

Then comes in the child the period of growing intelligence, first developed through the perceptions of sense and the workings of the imagination, that period when the literature of the fairy-tale flourishes and Cinderellas and Bluebeards people the world.

To this we find, as a parallel in the history of the race, the period of mythology, and the "golden age" of the poets.

Next to this in the well-ordered training of the child comes the first idea of moral relations of duty, of piety, of a divine Superior; and to this we find in the world's history the corresponding period of revelation, and the introduction and spread of Christianity.

Then in the child comes the education in methods of expression. The child learns to read, to write, to express himself, and to grasp the thoughts of others in various languages.

To this we find a parallel in the age of reviving learning, when the great schools of Europe were founded and flourished, and taught the classics, rhetoric, logic, and other cognate subjects, all having a direct bearing upon modes of expression.

Now when the child has mastered these preliminaries, what is his next step, if he does the best for the development of his own powers, and for his usefulness, to the world at large? You will at once answer me, he goes out from the shelter of the scholastic walls into the world of nature, he comes in contact with its facts, the laws of the material universe, and aided by the physical strength, stimulated by the imagination, restrained by the moral sense, guided by the intellectual training which he has received, he begins the real battle of life, and wrests from nature, by his own exertions, that which shall sustain and benefit himself and his species.

What then may we look for from the race which, at this present point in its career, has gone through the same preparation, but that *it* should address itself to the same work, and with frame, heart, soul, and intellect sufficiently trained for the task, turn to the great labor of developing from the inexhaustible stores of the universe, the vast material benefits which there await its research, to awake into beneficent energy?

For ourselves, and with reference to our own action in the future, this comparison, which we have just made, is also suggestive.

This great boy (the human race) we see is in his workshop, and if we want to give what will be of most use and pleasure to the sturdy youth, we must not select new toys, new fairy-tales, new tracts, or new grammars, but new *tools*.

He needs no new games for his amusement, no new romances to develop his imagination, surely no new religions to guide his soul, and no new languages to express his thoughts; but he can make the best use of any quantity of *new tools*, and of the opportunity and instruction for their employment.

The closing address, appropriately delivered on this jubilee occasion by the then President of the Franklin Institute, so well defines the character of the Institute; so clearly differences this American undertaking from the contemporary movement which, inspired by a like purpose, arose simultaneously in Great Britain;—this feature of the address giving to it enduring historical interest,—the speaker moreover, portrays so distinctly the wide-spread feeling of the day among the people, that an advance in the methods and some change in the definite purposes of public school teaching, was desirable; that it is here given in full. Its frequent suggestions and forceful arguments are as pertinent in 1892 as when they were spoken in 1874.

ADDRESS BY MR. COLEMAN SELLERS,
(President of The Franklin Institute.)

It is well nigh forty years ago, I think, that Professor James P. Espy, the storm king, as he was called, taught school in the Franklin Institute building. The present model room was his school-room. Somehow, ever since the time when that enthusiastic old gentleman tried to pound learning into me—as was the wont in those days of birch rod and ratan rule—the Franklin Institute has been connected in my mind with instruction, with learning. No more fitting time perhaps than now, at the close of its fifty years of usefulness, to tell how it has taught, how it can teach, and what need there is in these days of progress, for certain kinds of instruction not yet obtainable in our common schools.

HOW MECHANIC INSTITUTES ORIGINATED IN GREAT BRITAIN.

It was in the first years of this century that Dr. Birkbeck of Glasgow, conceived the idea of lecturing to artisans on subjects that would aid them in their callings. His scheme took well; his lecture-room was crowded, and able men volunteered to aid him in his laudable enterprise. During the years 1823 and 1824 the first Mechanics' Institute took shape as the outgrowth of what Dr. Birkbeck had done, and he very properly was called to preside over the first one founded in London. Mr. Brougham, afterwards Lord Brougham, was prominent in its organization. This was being done in England at the very time our Franklin Institute of the State of Pennsylvania for the promotion of the Mechanic Arts was coming into existence. With the foundation of the London Society all England and Scotland seemed to waken to the need of scientific instruction for the mechanics and artisans—and in all the great towns, even in some villages, Mechanics' Institutes sprang up, to lead a short life of active usefulness, then to languish and to die. These Mechanics' Institutes were not organized by mechanics—they were originated by philanthropic persons, who, seeing the need of a higher education of the working classes, spent their time and their money in this direction. They failed, simply because those for whom they were created would not avail themselves of their advantages.

ORIGINAL FEATURES WHICH CHARACTERISE THE FRANKLIN INSTITUTE.

Our Franklin Institute was from the beginning a Mechanics' Institute, in one sense of the word. It taught by lectures, and sometimes by classes, but it was always more than was contemplated by the societies abroad. If I may so express myself, it was, and still is a democratic learned society; it is not exclusive. No well-behaved person is excluded from its membership. All who desire to reap its benefits, or to aid it in its great work of promoting the mechanic arts, can join it. This is not so with the so-called learned societies of this and other lands. They select their members from among those who have already distinguished themselves in the arts or sciences, or are likely so to distinguish themselves; hence, their membership is confined solely to the learned of the land. Now, mark the difference in our case. Learned men join our society, and in its halls come in contact with those who may be unlearned, so far as books are concerned, but better informed in some special art or trade. Theory and practice are brought together, and each helps the other. Distinguished scientists admit that they are indebted to this association for information of a practical character, probably not readily obtainable otherwise. While on the other hand we, each one of us, know how we have been benefited by their learning, and with what attentive earnestness we listen to their words.

In the youth of our Institution, when this now vast city was comprised within narrow limits, when those who frequented our halls were less scattered than now, each day and each evening there came together a little band of congenial spirits—mechanics, artisans, and professors, who labored earnestly to carry out the great aim of the society, and who were at all times willing to sink their personality in the good of the society. Their work was the work of the Franklin Institute, not of its individual members. Among those men who gave their best time and energy to this labor were many men neither mechanics, artisans, nor professional scientists, but lovers of the arts and sciences. Looking over the pages of the members' roll—many such names occur—few, indeed, of the early ones are here to listen to my words to-night.

A TRIBUTE TO ONE OF THE FOUNDERS OF THE FRANKLIN INSTITUTE.

With one, however, I have talked much of late, and from him learned very many interesting facts relating to the Institute. It was in his office that some of the first meetings were held that led to its organization, and his knowledge of its workings extends through its entire career. We had earnestly hoped that he would have addressed you this evening, but his strength was not equal to the task. So I promised him to say to you it is his firm conviction that the vitality of the Institute is in the union, the close union and mutual reaction of theory and practice. He recounted many incidents to show how meritorious inventors had been aided by disinterested theorists; how timely warning from the better informed in what had been done has saved many a fruitless ramble over already well-trodden ground in the search of novelties. My first recollections of the workings of our society are inseparably connected with his name. He was a member of the first committee upon which I served, and his wonderful memory was my astonishment then as it is now. His mind was an open encyclopaedia to us all, and it was from the kind interest taken by him and by others like him in our scientific labors that we received the greatest encouragement in our work. I have ventured to take this kind gentleman, Mr. George Washington Smith—as an example of disinterested labor—because he was neither a mechanic nor a professional scientist, but nominally a lawyer (I know not if he practiced law), a scholar by preference, and a lover of all that tends to advance the material welfare of his countrymen. It was the work done by him and many others like him in the active, thankless duties of the scientific community, that made many of our most valuable

reports of so great use to the world at large. Among these hard workers were young men who subscribed their names to the constitution with no calling as yet selected to mark their position in life—many of them since known to fame. In that long roll, too, may be found names of men now noted and honored in the arts, who in the beginning inscribed after their signatures callings and trades little indicative of their after greatness. These men were educated practically in the Franklin Institute; it was there their minds received direction.

THE GROWTH OF PHILADELPHIA.

Thus the Franklin Institute has prospered in its teaching—in its teaching of men by men. Out of the town that saw the beginning of our society fifty years ago, Philadelphia has now spread over an entire county, and in area is, perhaps, the largest city in the world under one municipal government, and to-day it stands in the front ranks of industry. To say it is the Manchester of America is saying but part of the truth. The world in congress at Paris and Vienna recognized this, and gave first honors to our workmen. Philanthropists from abroad visit us and ask to be shown the place where the working people—not crowded in filthy tenement-houses and hovels—live each in his own home—his neat, comfortable home; and they seek to know how far education has progressed among the makers of the wealth of the world. They know full well that the rudiments of science, at least, are needed by all mechanics in all trades; they know full well that the great universal language of mankind, the language of the pencil, the picture language, is the very foundation of all the arts; everything that is to be made, at least well made, must be first drawn, must find its shape on paper.

ABSENCE OF ANY ELEMENTARY TECHNICAL TRAINING IN THE COMMON SCHOOLS DEPLORED.

They visit our common schools, and they note that the pupils have plenty of grammar, plenty of geography, and spelling, and reading, and so on, but barely rudiments of science, and scarcely any drawing whatever; this, too, when the world is crying aloud for technical education. How strange it must seem to those who come to us from the old countries, where the schools of art are side by side with the museums and the great art galleries, and where all these great collections are open to their advantage, each and every day of the week, where the use of the pencil, the only universal language of the world, is taught with the a, b, c's of their native tongue. We can indeed say, that for well nigh fifty years, the Franklin Institute has tried to remedy this defect. There almost only can the young mechanic obtain the principles of the art. It is true, our noble Academy of Fine Arts throws open wide its doors to those who can take the time to avail themselves of its classes, and the School of Design for Women, an outgrowth of our Institution, does its part; the High School, with its night classes for artisans, helps in the work; but of the thousands of children who pass each year through our common schools, how few can avail themselves of the chances, how few know the need of he art that underlies all other arts?

Our common school education gives us traders, gives us shopkeepers, but it gives us no artisans. I know not if this can be remedied, but I do know we require some other training for our sons and our daughters.

THE COMING CENTENNIAL.

But two years hence all the nations of the earth will be represented in our park—they will bring with them the work of their hands and their brains. Then will our people be able to see and judge for themselves how early education reacts on

art, and how much need we have for cultivation and refinement to exalt the faculties of our artisans. Go into our great industrial establishments, and seek out the modellers and the designers, the draughtsmen, speak to them, and many times you will be greeted with the accents of a foreign tongue. True we pay high wages, and the educated designers of Europe will make their homes on our shores. But why not train our children to fill these places? Most unquestionably there is a freshness of thought and an originality of conception in the products of American ingenuity, but they lack, sadly lack in some respects, a cultivated and refined appreciation of the beautiful.

THE NEW TRAINING NEEDED FOR THE CHANGED CONDITIONS.

There was a time not fifty years ago when the workshops of Philadelphia competed only one with another. Trade was confined to narrow limits; with little competition there was little need of economy and careful calculation in the conduct of our factories. Now the railroad, the steamship, and thought borne on the wings of lightning, have broken down all geographical barriers, and the workshops of Philadelphia find competitors in the workshops and cheap labor of the oldest lands. How are we to hold the van in this strife but by more excellent productions more cheaply produced? How are we to achieve this result but by putting more brains in our work? Say not to me that learning unfits our men for work. I tell you proper instruction is what our working people most need—what the Franklin Institute has ever tried to give them. There is in the world drudgery to be done, drudgery that needs no brain work, but there will be through all times enough stupidity to satisfy all the wants in this direction, and intelligent laborers will make their heads save their hands to their own profit and the benefit of the whole human family. That a means of educating our young men and young women in the direction of practical industries is greatly needed is evinced by the change now progressing in our higher schools. Over our broad land technical colleges are springing up, and students are crowding their halls. In our midst the University of Pennsylvania, coupled with whose history is the name of Franklin, whose professors and teachers are our own active fellow-members, but a little while ago reared for itself vast halls for learning yonder on the west banks of the Schuylkill—this, to make room for science, to enable our young men to fit themselves to be engineers, to be architects, to be what they will. The learning there acquired is with an aim. The student has a profession before him, and he prepares himself for his life's work. These schools and colleges do but a part of the work; it is with men as men, they must continue their training.

BOYS MUST NOW BE SO TRAINED AS TO BECOME THE CAPTAINS OF INDUSTRY.

Fathers and mothers of my dearly loved country, believe me no want is so deeply felt in this land as the want of practical, technical education. Give to your sons and to your daughters a sound foundation of useful learning; teach them the pleasures, the dignity of skilful manual labor; make their minds leaders of their hands, and teach their hands to be willing servants to their minds. It was but the other day that a chemist in a rolling mill would have been laughed at by the practical iron masters of the land. Now, a leading engineer says on the public rostrum, that the future of our iron interests is in the hands of our chemists, in the laboratory, and in learning. Would you have your children take part in this great work? Remember that in all our workshops there are places for but few of them, as learners, as apprentices. Give to them, therefore, that instruction that will make them of value in the land, that will cause them to be selected for places of trust; for the contest in the world's industries in the future is to be fought with brains, not with hands alone.

THE CLAIMS OF THE INSTITUTE UPON THE PUBLIC.

The Franklin Institute has for fifty years been laboring in the direction of the scientific education of mechanics, and proud are its members of the work it has done. Yet how true the words seem, that came to us last Tuesday in our Public Ledger, when it told the story of this Society's usefulness, and said, "its achievements, we believe, have been more thoroughly recognized and appreciated everywhere than here in its own home. This is said to be characteristic of Philadelphia, that it does not 'exploit' its own good works. It would be well if our people were of a different habit in this respect, and it would be better if, at the fiftieth anniversary of the Institute on Tuesday next, at Musical Fund Hall, there should be inaugurated a new era of the recognition and appreciation of its merits, its services, its great usefulness, and its honorable record. If Boston possessed such an institute, with such a history, its renown would not be allowed to become dim at home by any lack of public proclamation of what it is and what it has done."

Citizens of Philadelphia, your Institute's usefulness is limited only by its pecuniary means. Its fifty years' work has been done with but little money to do it with. No liberal endowment has placed it beyond want, and rigid economy has barely eked out the yearly contributions to meet the most pressing wants. Shall it be so in the future? It is not asked that you give to it, hoping for no return. What we want is your good names added to our list of members. In a population of well nigh a million, scarcely 900 names are on our roll of members. All the world abroad knows and honors our Institute. Talented men in distant cities ask to be, and are proud to be, considered members of it. Will not you join us in our task, and when the Centennial of our nation's freedom is being celebrated in our midst, say to your guests that you are members of the Franklin Institute?

Working men of Philadelphia, let me rather say fellow-workmen of America, my most earnest sympathies are with you in all your efforts towards self-improvement. My own path in life started from the school-house through as lowly walks in life as any of yours. If fortune has led me to higher usefulness, believe me it has been not without diligent application and hard study. To you the Franklin Institute opens its doors and affords you a sure way of increasing your store of knowledge. Attend its lectures, be present at its meetings, give from your store of practical experience freely, take in return what others can give to you. It will be to you as it has been to me and to others—a school of great value. Trust me, the teaching of man by man in frequent intercourse is the most potent means of acquiring knowledge, and knowledge well applied is indeed a power.

At the close of Mr. Seller's address the meeting adjourned.*

*These anniversary exercises of the Franklin Institute, an account of which is given above, were held in accordance with a vote of the Institute at the regular meeting in December 1873, on the suggestion of the President. On motion of Mr. Hector Orr, a committee of five including the President was appointed "to devise and carry out" the celebration.—The committee consisted of Mr. Coleman Sellers, President of the Institute and Messrs. Hector Orr, Frederick Fraley, Bloomfield H. Moore, and William P. Tatham. The following is a copy of the order of Procedure as arranged by this Committee.

1824.]

FRANKLIN INSTITUTE.

[1874.

Programme of Exercises at the Musical Fund Hall, Friday Evening, February 6, 1874.

[Music.]

Assembly called to order by Mr. COLEMAN SELLERS, President of Franklin Institute.

THE LECTURES.

A marked educational feature of the management has been the winter courses of lectures; which are given under the auspices of the Institute, and have been continued during the whole period since it was first founded.

These comprise theoretic and technical courses on various scientific subjects, as well as courses of popular lectures profusely illustrated by stereopticon and other methods. The list of lecturers for a series of years, would include a very large number of the leading scientists of the country. A list of subjects, and of lecturers of the year, is given in each annual report; from twenty-five to forty lectures are given each year, and the list of topics would include the whole round of modern science. These lectures are free to the members of the Institute and they receive free tickets for distribution; formerly the public paid a small entrance fee.

THE LIBRARY.

This comprises a very valuable collection of books, pamphlets, the reports of learned societies, industrial and scientific periodicals, and complete sets of American and European patent records, and is constantly growing. The addition, made in 1884 of a library of Electrical Literature, has been noted. The report of the librarian made at the annual meeting, January 21, 1891, gives a total of 35,015 volumes; exclusive of a classified and catalogued collection of 20,972 pamphlets. There was also a collection of nearly two thousand "maps and charts," a thousand "photographs and lithographs," some six hundred "designs and drawings," and some twenty "manuscripts." An ample sum has been subscribed for the completion of important serials, which are being sought in this country and in Europe; the Institute, has been designated as a public depository of the United States Government publications, and has received a large number which had been deposited with the Moyamensing Literary Institution, which was formerly designated to receive them, but has relinquished its claim in favor of the Franklin Institute.

[Music.]

Address by Hon. FREDERICK FRALEY, Treasurer of Franklin Institute.

[Music.]

Address by ROBERT E. ROGERS, M. D., Professor of Chemistry in University of Pennsylvania, and Vice-President of Franklin Institute.

[Music.]

Address by HENRY MORTON, Ph. D., President of Stevens Institute of Technology, Hoboken, N. J., and late Secretary of Franklin Institute.

[Music.]

Closing Address by Mr. GEORGE W. SELLERS, President of Franklin Institute.

This very valuable library for specialists, had so far outgrown its accommodations that Mr. Charles Bullock, chairman of the Library Committee, made in his report to the annual meeting, January 18, 1888, a strong appeal for some early provision for increased room and more secure protection; so that the requisite accommodation for the members and the public who have access to it may be secured. An appeal strongly supported by President Wilson in the report for the Board of Managers.

THE COLLECTIONS.

The Institute, has geological and mineralogical cabinets, and also a large collection of models of machinery, some very interesting historical machines, and some six hundred drawing studies of various kinds, mostly mechanical drawings.

THE JOURNAL.

The Franklin Institute, issues under this title each month, a handsomely printed pamphlet filled with fresh scientific articles; some of these are lectures which have been delivered before the Institute.

The number for August, 1891, bears the imprint Volume CXXXII, No. 788. The Journal was formerly under the direction of a single editor, but a few years since was placed in charge of a committee. The Secretary of the Institute serves as permanent editor, with one member of the committee, who each serve in turn, for a month, associated with him.

The following notice of this official periodical of the Institute is from the "announcement and programme of lectures for 1891-'92."

"The Franklin Institute began, in the year 1826, the publication of a *Journal*, devoted to Science and the Mechanic Arts, which has been continued uninterruptedly to the present day. It contains the record of the scientific and other useful work of the Institute, besides many valuable contributions relating to the growth of American industries and the progress of science and the useful arts in general during the past half century. The *Journal* has an acknowledged position at home and abroad as a standard work of reference.

The complete file of the *Journal*, embraces: The *Franklin Journal* (4 vols.), 1826-1827; the *Journal of the Franklin Institute*, second series (26 vols.), 1828-1840; the *Journal of the Franklin Institute*, third series (100 vols.), 1841 to the present; or, 132 volumes in all.

In its present form the *Journal* is an octavo of 80 pages. It is issued monthly. The six issues, January to June, and July to December, each constitutes a complete volume, with index and title-page.

The *Journal* is edited by a Committee on Publications with the assistance of the Secretary of the Institute. The subscription price is *Five Dollars* per year. Members have the privilege of subscribing at *Three Dollars* per year.

A complete index of the *Journal* arranged by subject-matter and authors, and covering the first 120 volumes (1826-1885), has been published and will be sent post-paid on receipt of *Fine Dollars*."

PROPOSED RE-ORGANIZATION OF THE INSTITUTE.

The annual report of President Banes, January 19, 1887, refers to a movement for a re-organization, and recites several changes in the By-Laws made during the year, as a result of the report by the "Committee appointed by the Institute,—consisting of Messrs. C. H. Banes, Chairman, Charles Bullock, J. Vaughan Merrick, Isaac Norris, Jr., William Sellers, William P. Tatham, and John J. Weaver,—to take into consideration the future work of the Institute, and to suggest plans or methods for extension."

"The most radical change was in the creation of a Board of Trustees, in whom the property of the Institute shall be vested; the Trustees to be elected; partly by stockholders, and partly by the Board of Managers, and to be self perpetuating."

The finances of the Institute, greatly aided by the success of the Exhibition of 1874, and that of 1884, are continually drained by the increasing demands; the very vitality of the Institute being shown in these activities.

President Wilson, thus states the needs of the Institute, in his report, made January, 1888.

REORGANIZATION AND FUTURE WORK.

The Committee on Reorganization having completed the revision of the By-Laws, and provided for the creation of a Board of Trustees, it remains that these Trustees be elected—a proceeding that it would be advisable the Board of Managers should carry out as soon as practicable.

It is within the province of this Committee on Reorganization to continue its work in the matter of formulating and reporting "what should be the future work of the Institute," and also to prepare plans for a suitable building in which the Institute can carry out that work, and it is of the utmost importance that the Committee should continue its labors to a conclusion.

The wants of the Institute are vital. It is a great and noble institution, worthy of the name it bears, and doing invaluable work for the City of Philadelphia and for the world.

Yet it is embarrassed in every direction; for want of room in its building, want of conveniences in its educational departments, and, above all, want of funds. Every year its accounts present a deficiency. This cannot go on forever. Unless some change takes place for the better, the day will surely arrive, although it is hoped it may be far off, when its doors will be closed. Cannot those who are interested in the promotion of educational privileges, and who have the means to make a practical application of their interest, have their eyes opened to the field here presented?

Under the reorganization, the system of the Institute is in the best shape possible for such aid. Its Managers, its Officers and its Professors are active, reliable, energetic and economical, doing all they can with the least possible expenditure; but, it may as well be plainly spoken, it is money that is wanted, money, properly and securely vested in the hands of its Trustees, to be rightly applied to

the continuance and advancement of the Institute. From an examination of the expenditure account it will be evident to anyone that a decrease in these expenditures cannot readily be made without seriously crippling the efficiency of the Institute.

New and more extensive buildings are needed. The Library has far outgrown its quarters. Here is one of the most valuable purely scientific libraries of the country, proving its usefulness for consultation and reference every day, containing many volumes that, if destroyed, could never be replaced, and yet in a building not even fire-proof.

Cannot a systematic effort be made to improve this state of things? The Institute asks for aid. Shall its appeal be in vain?

JOS. M. WILSON, *President*.

By Order of the Board.

PUBLIC EXHIBITIONS OF ARTS AND INDUSTRY HELD UNDER THE AUSPICES OF THE FRANKLIN INSTITUTE.

The article in the Ledger, previously quoted; states, further, that "the first exhibition of American manufactures under the auspices of the Institute, was held in 1824; and that twenty-two similar exhibitions in all, had since been held. They have been highly successful. It is largely through the income derived from admissions to these exhibitions that the classes, etc., have been sustained." In Mr. Fraley's memorial address, he stated that the exhibitions were suspended by reason of inability to secure a building of sufficient size for the purpose, he also announces that, a suitable building having been offered through the liberality of the Pennsylvania Rail Road Company, such an exhibition will be held in this, the "Jubilee Year" of the Franklin Institute; with the definite purpose of promoting the success of the Centennial exposition to be held in 1876. A permanent memorial of this twenty-seventh exhibition exists in the official Report* made by "the Committee on Exhibition" to the Board of Managers of the Franklin Institute from which the following quotations are taken.

The address, issued by the Franklin Institute authorities, inviting participation in the proposed exhibition, is here quoted for its historical reference to the first exhibition held by the Institute, and for the account of the prizes which it is now in the power of the Institute to award.

ADDRESS OF THE BOARD OF MANAGERS.

To Manufacturers and Mechanics of the United States:

In inviting contributions to an Exhibition which is intended to celebrate the 50th year of the Franklin Institute, the Managers naturally recall the language used by the founders of the Society in their first quarterly report, made to the Institute upon the 15th of April, 1824.

* Report of the twenty-seventh Exhibition of American Manufactures, held in the City of Philadelphia, from October 6th, to November 12th, 1874, by the Franklin Institute, of the State of Pennsylvania, for the Promotion of the Mechanic Arts. 1874. Pp. 236-xliii.

Announcing the intention of holding the first Exhibition of the kind in this country, (which was actually held in the month of October, in the year 1824,) they say:

"An object of equal, if not greater importance * * * is that of public Exhibitions to which all the products of national industry may be sent; the effect and consequence of such Exhibitions will necessarily be to extend the reputation of the Institute, to stimulate the zeal of the members, and to excite a proper degree of emulation and of justifiable rivalry among the numberless manufacturers and mechanics of this city. It is confidently believed that when the products of our industry are collected from the various workshops now dispersed throughout the city and State, and exhibited together, they will form a collection calculated to excite a gratifying sense of pride in the bosom of every well wisher to the prosperity of our manufacturers, and an encouraging hope that, under proper regulations, we may soon compete with foreigners in the manufacture of all useful articles."

These views and hopes have been justified by the success of their pioneer enterprise and of those which followed it, as well as by the general practice now existing, of Annual Exhibitions elsewhere, but more than all, by a comparison of the state of the Arts fifty years ago, with their condition now.

This comparison may, we trust, be facilitated and illustrated by our intended Exhibition. It cannot be denied that much of the general progress of the Mechanic Arts may fairly be attributed to such expositions, and prosperity in many individual cases may easily be traced to the public recognition which our exhibitions have invited. On the other hand, the benefits to the community have been equally great, and all the motives which were enumerated by our first Board of Managers are fully in operation to-day.

We hope, therefore, when self interest and the desire for the public good both incite us to one line of action, that the parties to whom we especially appeal, may unite to make our proposed display worthy of the occasion.

In the earlier Exhibitions held by the Franklin Institute, a list of premiums offered was published beforehand, but experience proved that many of the Medals were neither earned nor awarded, while the acknowledged excellence or novelty of other articles exhibited, compelled the award of Medals which had not been proposed. The plan was therefore definitely abandoned in 1838, and Medals may now be achieved for any product of Inventive Genius, or by excellence of Execution.

The Scott Legacy Premium, consisting of a Bronze Medal, with the motto, "To the most deserving," together with the sum of \$20, is vested in the city of Philadelphia by the provisions of the Will of John Scott, of Edinburgh, made in the year 1816, and the city has confided the trust of awarding the premium to the Franklin Institute. It is a premium of peculiar honor, to be distributed among ingenious men and women who make useful inventions.

The Elliott Cresson Gold Medal, an honor which has rarely been awarded, is also entrusted, by the provisions of his Will, to the Franklin Institute. It may be awarded for some discovery in the Arts and Sciences, or for the invention or improvement of some useful machine, or for some new process or combination of materials in manufactures, or for ingenuity, skill or perfection in workmanship.

Both of these premiums are awarded by the Board of Managers upon the recommendation of the Committee of Science and the Arts.

In order more readily to find experts qualified to act as judges of each class of articles exhibited for competition, the classification will be made according to the position each article occupies in trade, without regard to any rule based upon the use of the article.

The Rules and Regulations adopted by the Board of Managers to govern the Exhibition, and all other necessary information, are hereinafter contained.

By order of the Board of Managers,

PHILADELPHIA. May 13th, 1874. *JOSEPH HOLMAN, Actuary.*

As some of the early exhibitions had entailed a loss, and as the resources of the Institute were not in such a condition as to justify it in assuming any risk of indebtedness, the first step in the new movement was to secure a guarantee fund by subscription among the citizens;—a fund of \$25,000 was asked, but the proposition was so favorably received that the subscriptions by liberal citizens and firms, speedily ran up to \$46,350, thirty-five, agreeing to give \$1,000 each; seventeen, \$500 each; seven, \$250 each; two, \$200, and seven, \$100 each.

FRANKLIN INSTITUTE EXHIBITION, 1874.

REPORT OF THE COMMITTEE ON EXHIBITIONS.

To the Board of Managers of the Franklin Institute :

The Committee on Exhibitions, which, under existing By Laws, is a Committee of your body, respectfully report:

That the Exhibition of 1874, held to celebrate the Fiftieth year of the Foundation of the Institute, proved worthy of the occasion, whether its success be tested by the number and excellence of the articles exhibited, the large concourse of visitors, the instruction and gratification it afforded to the community, or by the pecuniary results.

The first movement towards the Exhibition was at the stated meeting of the Institute held February 18, 1874, when, on motion of Mr. G. Morgan Eldridge, the subject was referred to the Committee on Exhibitions.

The Committee lost no time in addressing a letter to J. Edgar Thompson, Esq., late President of the Pennsylvania Railroad Company, making an application for the use of their depot on Market Street, between Thirteenth and Juniper Streets, for the purpose of an Exhibition. This application having been laid before the Board of Directors, and favorably entertained by it, the President (Mr. Thompson) was authorized to act, which he did by the letter of his assistant, Strickland Kneass, Esq., dated the 17th of March, placing the depot at our disposal during the months of September and October, 1874. Thus, by the exercise of the greatest liberality on the part of the Pennsylvania Railroad Company, the Institute had, for the first time for many years, the opportunity of holding an Exhibition under promising conditions.

At the stated meeting of the Institute held the 18th of March, resolutions were adopted, requesting the Board of Managers to hold an Exhibition, and to secure a guarantee fund to indemnify the Institute against loss. This condition having been fulfilled, public announcement was made upon the 14th of April, that the Exhibition would be held from the 6th to the 31st of October, thus allowing thirty-five days for the transformation of the building and preparation for the Exhibition, and twenty-six days for the Exhibition itself.

Your Committee, before this time, had been strengthened by adding to it all the members of the Board of Managers, and the assistance of the Institute at large was invoked, resulting in the appointment by the President of one hundred members, for the purpose of forming Committees on the various classes of Exhibits. Some of these gentlemen were appointed upon the standing sub-committees, and acted with the greatest ability, zeal, and usefulness. The Class Committees were composed, when possible, of members associated with the various trades and industries. It was made their duty to stimulate exhibitors in their respective classes, and thus to induce an Exhibition which would command the public attention and secure success.

These Committees were also requested to nominate the Judges in their respective classes. It is believed that the policy thus adopted for the first time, had a large influence upon the ultimate success of the Exhibition.

The Committees on Rules, Transportation, and Publication having completed their preparations, a pamphlet containing an address by the Board of Managers, with the necessary information and the Rules governing the Exhibition, was issued upon the 13th of May. The duties of the Committee on Space then began, and were continued all summer, culminating at the opening of the Exhibition. On the 1st of July, Mr. J. B. Knight, who had been actively performing committee work as a member of the Institute, was appointed General Superintendent of the Exhibition.

The Pennsylvania Railroad Company had conditionally promised the use of the depot from the first of September, and the surveys and preliminary arrangements were made by the Sub-Committee on Building and Machinery to accomplish its work in the interval of time allowed it. But, actually, the Company abandoned the depot on the 19th of August, and we were placed in possession twelve days before the time specified. The advantage thus gained was never lost. The Sub-Committee pushed the work with such energy that the Exhibition building was ready to receive goods about the 1st of September, instead of the 14th, as advertised. * * *

The Exhibition was opened by the Governor of the State of Pennsylvania, upon the day appointed, and attracted the sustained attention of the public to such an extent, that it was deemed advisable to continue it open for twelve days longer than was originally designed. * * *

STATISTICS OF THE EXHIBITION.

The whole number of paying visitors was 267,638, besides members of the Institute, their ladies and minors, and persons admitted on complimentary tickets issued to the press and to others whose liberality it was desired to recognize. Making due allowance for these, it may be said that the Exhibition was visited by one-third of our population. The number of applications for space was 1,528. The number of entries at exhibition, many of them covering numerous items and large displays, was 1,251. The number of steam boilers in operation was 9, of 316 horse-power in the aggregate, consuming 267 tons of coal. There were 3 steam engines driving shafting, 22 driving pumps, and 11 driving particular machines. The whole number of steam engines at work, or in motion, was 46. The whole number of machines in motion was 281.

Some of the displays were of peculiar excellence. The photographs were particularly good, and would class strictly with the fine arts; but besides these, the variety and beauty of the chemicals displayed, the wonder working of the sewing machines, the brilliancy of the saws, the splendor of the chandeliers, the rapidity of the printing press, the precision of movement of the machine tools, and the truth and finish of the paper cylinders, appealed not only to our appreciation of the usefulness of these exhibits, but in addition lent to them the charms and influences of the fine arts.

As a further testimony to the excellence of the exhibition, it appears that although the rule upon the subject of premiums, prepared by the proper committee and adopted by the Board of Managers, was more severe than usual, the premiums awarded under it were more numerous than at any previous exhibition; being 201 silver medals, 228 bronze medals, and 222 certificates of honorable mention, in all 651, while many subjects were recommended to the Committee on Science and the Arts, for the award of the special medals of the Institute.

* * * The results of our efforts provide the readiness of our people to visit a

meritorious Exhibition, and should encourage the Managers of the great Centennial in hoping for a magnificent success to their undertaking.

It remains to record our thanks to those persons whose liberality, or kindness has assisted us in various ways. The thanks of the Institute are due to the authorities of the Pennsylvania Railroad Company, whose liberality already noticed was followed by repeated acts of like character and by acquiescence in all our requests; to the subscribers to the guarantee fund, who afforded us the first encouragement, a like acknowledgement is none the less due, because the result has exempted them from all liability. * * *

Thanks are expressed by name, to various City officials and departments, to United States Departments which contributed, and to leading exhibitors.

The officers employed in the Exhibition performed their duties with the greatest efficiency, and the Committee take especial pleasures in testifying to the ability, energy, and tact of the General Superintendent.

W. P. TATHAM,

Chairman Committee on Exhibitions.

PHILADELPHIA, *January 18, 1875.*

The following is the list of the Committee whose efforts made this memorial Exhibition such a success:

Committee on Exhibition.—W. P. Tatham, Chairman, Charles S. Close, B. C. Tilghman, Frederick Fraley, J. E. Mitchell.

This Committee, by a vote of the Institute, is to be enlarged to one hundred, including all the members of the Board of Managers.

STANDING SUBCOMMITTEE.

Finance.—W. P. Tatham, Chairman, John Baird, J. Vaughan Merrick, Coleman Sellers, Frederick Fraley.

Rules and Regulations.—Henry Cartwright, Chairman, Theodore Bergner, Thomas Shaw, James E. Mitchell, Alexander Purves.

Building and Machinery.—Charles S. Close, Chairman, Washington Jones, Joseph M. Wilson, George W. Ewitt, Raphael Estrada, Robert E. Rogers, M. D., Frederick Graff, D. D. Willard, John H. Cooper.

Mr. Estrada directed the running machinery during the Exhibition.

Space.—Charles Bullock, Chairman, Frederick Graff, Joseph M. Wilson, S. Lloyd Wiegand, W. P. Cooper, Samuel Sartain, Jno. Hall, Robert Grimshaw, William C. Ewing, Hartley Knight, Christian Faser, G. M. Ward, M. D., W. G. Armstrong.

Classification.—Pliny E. Chase, Chairman, J. B. Knight, Alexander Wilcocks, M. D.

Transportation.—Enoch Lewis, Chairman, William C. Ewing, Charles Field.

Correspondence and Publication.—Pliny E. Chase, Chairman, Samuel Sartain, George F. Barker, Edwin J. Houston, J. B. Knight, G. Morgan Eldridge.

Mr. Sartain had entire charge of preparing the Admission Tickets during the Exhibition.

The story of this exhibition, of its purposes and its success, is well told in the account of the closing ceremonies, and in the address by President Sellers. This address, interesting from its historical references, suggestive by its recital of evidences of improving taste in the use of color decorations, and of the wonderful changes in woman's

industry, which have taken place since the previous exhibition was held, as well as by the evidence given of the perfection already attained by some American manufacturers, as demonstrated by the fact that their native goods were bought by a confiding public in the confident belief that they were buying imported goods, is, also, of value as showing the active interest felt by the members of the Institute, not only in their own exhibition but in promoting the success of the coming Centennial Exposition; the great Fair, to which all nations were invited. It is, then, not only for its direct relation to the history of this local institution, but also for its general interest that, despite its length, this address is given in full in the following pages.

Something of the secret of the unprecedented success of the International Centennial Exposition, which followed two years after, can be learned from the evidence which here appears of the forethought of the members of the Institute, and of the active interest taken by the liberal citizens of Philadelphia.

The Treasurer's account, shows a balance in favor of the Institute, after payment of all expenses connected with the Exhibition, of over \$52,000.

CLOSING CEREMONIES.

Address of the President of the Institute.

On the evening of the 12th of November, the officers and managers of the Institute proceeded to the stand which had been erected at the transept. Mr. Tatham, chairman of the Committee on Exhibitions, made the following announcement:

MR. PRESIDENT: On the 6th of October, I had the honor to announce on behalf of the Committee on Exhibitions to the vice-president, who then occupied your chair, that the exhibition was ready to be opened. I have now the satisfaction to report on the same behalf that we are ready to close. We have had a season of unexampled prosperity. We have been favored with the finest weather, with entire freedom from accident, with a large attendance, and with the approval of a gratified community. It was originally intended to close the exhibition at the end of last month, but the difficulty of finding competent and willing judges delayed their appointment, and afterwards, the crowds which thronged these aisles were so overwhelming that it was impossible for the judges to perform their functions with satisfaction to themselves. The prolongation of the exhibition was, therefore, in a certain sense, a necessity, and the extended time has not been enough to enable all of the judges to make their reports. It is therefore impossible for us to declare the awards to-night, but we will do so at the earliest possible moment. The original announcement of this exhibition declared that it would be held in celebration of the fiftieth year of the foundation of the Institute. This fiftieth year shall be to us a jubilee; for by means of this exhibition we shall be released from a debt contracted nearly fifty years ago, and we shall be enabled more effectually to promote the mechanic arts and thereby promote the welfare of mankind.

Mr. Sellers, President of the Institute, then made the following address:

LADIES AND GENTLEMEN: It was the custom at former exhibitions of the Franklin Institute to close the exhibition by an address of some kind. The committee to whom was intrusted the arrangement of this evening, under the guid-

ance of my good friend, Prof. Robert E. Rogers, has seen fit to tell me that I should say a few words. Had the Board of Managers determined to omit this part of the evening's programme, or had my friend, Mr. Moore, in his speech at the opening, not hinted at it, I question if many of my hearers would remember the usages of

PROGRESS DURING THE LONG INTERVAL SINCE THE LAST EXHIBITION WAS HELD
BY THE INSTITUTE

so long ago. You must bear in mind that no exhibition has been attempted by the Franklin Institute since 1858, and those of us who took part in that attempt, or have had the care of the finances of the Institute since then, have no very pleasing memory of the many dollars taken from the already slim purse of our treasury to pay for the attempt to show our fellow-citizens what our artisans and our mechanics were doing. Do you wonder then that for some little time thereafter such exhibitions were not considered with much favor? During the sixteen years that have elapsed since that time, the world has not been standing still. Great events have transpired, and volumes of history have been crowded where as many pages might tell the story of equal years at other times. Our own beloved country has passed through a period of great trial, and seemed at one time likely to be rent asunder, but the old flag waves over all the United States, and I hope when we meet in this city, the birthplace of our nation's freedom, to celebrate the grand Centennial, we can all, North, South, East, and West, unite in thanking God for this unity. The world has not been standing still, nor have our people been idle during all these years; a great work, a humanizing work, has been going on over our whole land. Even during the period of war were our people cultivating the arts of peace, and each year, each month, and even each day has seen some new industry spring up, either original with us, or transplanted from foreign soil. Now, when the officers of the Pennsylvania Railroad have rendered an exhibition possible, by lending to us this building for this purpose, what surprising advance is shown! how amazing has been the progress! Here, in the space of a little over two acres, under this roof, what a grand collection has been brought together; and all this is the work of our people, in our own land! Philadelphia and its immediate neighborhood has contributed a great part of this; but much of great interest has come from more distant States. Glad would we have been had we seen some representative from each and every State in our whole Union.

Who can enter these doors, walk among the examples of man's skill and not be benefited by the sight? Who can examine that grand display of machinery, the finest ever brought together at one time in this country, without having his mind expanded or avoid a feeling of respect for those whose brains and hands have wrought these great works? Who can contemplate all the objects of beauty here displayed and not experience some mental improvement?

THE FIRST EXHIBITION EVER HELD BY THE FRANKLIN INSTITUTE.

As I sat in the quiet of my own home and pondered over the words I should say to you this evening, my mind wandered continually to this hall. I could see only the world of art and science as it now is, and as here represented, not as it was in the early days of this Institute; and yet before me lay the open pages of the First Annual Report of the Proceedings of the Franklin Institute, of the State of Pennsylvania, for the promotion of the mechanic arts. This is dated 1825, and tells of the exhibition held 1824. Few pages were required to enumerate the objects exhibited, and yet these pages are full of interest to us now. Premiums were given then as now, and with the object to foster the industries, special premiums were offered in advance for what was deemed of great importance. At that early day the Institute did its utmost to encourage the mechanic arts. Its members then as

now gave much valuable time in inquiring into the merits of inventions. The managers then declared that "The object of the Institute is by no means to erect itself into an umpire under the impression of infallibility, but to communicate to such as may apply, the opinions derived from science or experience of its own members; regard being had in the appointment of all special committees, to avoid the nomination of individuals whose prejudices or partiality might affect their decisions in certain cases." This bears directly on the report that is to be made of this exhibition, at the proper time. Judges have been selected with the utmost care to examine and report on all this collection, and those judges have pronounced on the merits of the various exhibits to the best of their ability. This has been a thankless task, as they well know that their report can not prove entirely satisfactory to all. The reports will be published over their signature, and it is hoped will prove of use as pointing out the road to higher honors for those who may be lagging in this contest.

THE RELATION OF THE PRESENT EXHIBITION TO THE COMING CENTENNIAL EXPOSITION.

Now, that this exhibition has proved so successful, it will be well to mention that its probable effect on the coming Centennial display was carefully considered. It must be borne in mind that the project of an International Exhibition of the arts and manufactures in this city, was originated by the Franklin Institute memorializing Councils on the subject, and it, as a society, has ever striven to aid it, and insure its ultimate success. The question was naturally asked how this exhibition, now so nearly ended, would affect the great exhibition to be then held. Careful consideration convinced us that a successful exhibition held under the auspices of the Franklin Institute would do good, not harm. It would of necessity be mainly a local display,—it would give to our own citizens some little insight into the resources of our city and its neighborhood. It would, without doubt, prove a good lesson to those who intended to take part in the Centennial. And it would induce many to exhibit who were before indifferent. This we now feel has been or will be the result of this effort on our part. It has, in fact, proved a sort of friendly trial of strength before entering the great contest of '76. The weak see how to make themselves strong; the strong how to gird their loins to meet a greater opposition. And our success has turned the thoughts of many far away to this city. Strangers visiting us can not fail to take away with them some account of the thriving industries that are here represented and will talk of the greater display in which they will take part, in the hundredth year of our nation's history. In that year the history of the Franklin Institute will have compassed more than half of the nation's lifetime, and intimately woven in its history is the progress of the arts during that time.

WHAT THE EARLY EXHIBITIONS COMPRISED.

But when in times past our mechanics and artisans were each year urged to display their industries in our exhibition, great efforts were required to induce them to take any part therein, and none of their exhibitions were truthful exponents of the state of the arts in our midst; save may be in one particular—the handiwork of our ladies. This was well represented in the days gone by, and wonderful were the bed-quilts and the patch-work that competed for our prizes. Where are they in this contest? Has sixteen years numbered them with the lost arts? Dry goods, too, came out strong in those days. Machines in motion were few and far between. Now what a change in all this as shown in this display. There are to-day in this city alone, more spindles running producing textile fabrics, than in any other city in the Union, not excepting those cities in the Eastern States, which are made up of cotton and woolen factories, and the homes of the working people only. Yet these

industries have been but sparsely represented here. Extended as this display has been in some directions, it does not do full justice to what is being accomplished by all the working people of the State. Many, very many are holding back their strength for that greater show, and noting what has been done here.

A NOTABLE ILLUSTRATION OF THE DEVELOPMENT OF PURER TASTE.

I would gladly trace the progress in the arts during the past fifty years up to the present condition as here shown, could it be done in the limited time I dare address you; but I would be derelict in my duty, were I to fail to do so in one particular instance—because it seems to me, great principles are involved. The machine display in this room, is unquestionably very fine, and when one glances over that broad expanse of iron servants of man's will, and peers through the forest of belts that give motion to these machines, one cannot but be struck by the remarkable uniformity in color there shown, and doubtless may think the dark gray tint, the absence of all gay colors, indicative of our Quaker tastes and habits. Ladies and Gentlemen, there is to the student of a nation's art progress, more in that quiet color than can be traced to any such reason. The lesson it teaches is worth learning. Pardon me, if I repeat to you, the oft-told tale, of how man, in the helpless infancy of the race, with his naked hands alone, given him for defense or offense, fought his way in the great struggle for life, with clubs and stones as his only weapons. Clubs and stones were his only implements in tilling the land and ministering to his wants; but at all times did he try to beautify his tools or weapons, and a savage taste guided him in his selection of modes of ornamentation. Century upon century, as the people grew, so did their hands, aided by their growing minds, give them better, more efficient implements; and century by century these aids to man have grown into what we now see before us. These dumb servitors of mankind, with their frames of iron and their sinews of steel, which for life and motion devour the hard rocks of our anthracite, and in living and moving, breathe from their metallic lungs the hot vapors of steam, are doing our work better, ministering to our wants more freely than could thousands upon thousands of slaves.

THE ÆSTHETIC IMPULSE INNATE IN MAN.

From the stone implements of the savage to what we now consider the highest type of mechanical skill, the desire to ornament, to beautify, has always guided the makers or their users. When machine-making became a trade, still man, seeking to satisfy his innate longing for the beautiful, borrowed from other arts, regardless of fitness, forms and colors of acknowledged beauty. He called to his aid every type of architecture, and decked his Gothic or Corinthian steam engine with all the gorgeous hues a painter's palette could offer him. As man's taste develops by culture, he learns that beauty cannot be separated from fitness; that the most graceful forms, the most lovely colors fail to satisfy the eye when transported from their proper sphere or inharmoniously blended. It is an uneducated taste that finds satisfaction in brilliant colors only, or seeks to beautify uncouth forms by gorgeous paints, while a higher culture fashions forms to suit the purpose for which they are designed, and colors them in subordination to their uses and surroundings. The grotesque architectural machinery of not many years ago is now seldom seen; conventional forms, beautiful enough for some purposes when wrought in wood or stone, have been abandoned, so that, now, looking over this typical collection of machines for so many varied uses, we find that a new order of shapes, founded on the uses to which they are to be applied and the nature of the material of which they are made, have been adopted, and the flaunting colors, the gaudy stripes, and glittering gilding has been replaced by this one tint, the color of the iron upon which it is painted.

That sombre tint is no indication of any Quakerish objection to bright colors, but indicative of a higher culture and more refined taste. Two years hence, those who hear me now will perhaps think of this question of taste when they look at what other nations will send to our shores, and display, side by side with our work, yonder in our park. Americans, some years ago, had earned for themselves the reputation of a savage liking for gay colors in ornamentation, not common in other and older countries. That a great change has taken place in the right direction in machinery this wonderful exhibition testifies; how far it has progressed in other trades I do not feel competent to judge, but I do feel very sure that the year 1876 will bring to us, in the greater exhibition—a nation will then hold—many a useful lesson in beauty of form, in humble objects; in the art of surrounding ourselves and homes with forms of beauty that satisfy æsthetic tastes, and give color and grace to our living. Most sincerely do I hope that my countrymen may feel that their display, in comparison with that of older nations, satisfies themselves, for I do know the American people are quick to appreciate, to learn, and to profit by their learning.

HOW THE PRESENT EXHIBITION WAS MADE A SUCCESS.

Now, a few words about what has been done by those who have labored so zealously to give us this exhibition. On the 19th of last August, the building in which we stand was a freight depot, abandoned for a more commodious building. The dust of many years rested on the beams above our heads, and the floor was like that of any stable. Almost hopeless seemed the task of cleansing; but the Franklin Institute lacks not willing hands and able minds. Chemists and mechanics gave their best talent to the work. A chairman of the exhibition committee, of rare fitness for his task, made admirable selection of superintendent and aids, and the work went bravely on. The room was ready ten days before the time fixed upon for the opening; but, at what a cost of labor and patience, those interested alone know. Their labors, their willingness, and their generosity, make a bright page in our society's history.

That the exhibition has proved a grand success is owing also to those of you who have placed your handiwork and your productions here; who have entrusted so much of rare interest and great value to our keeping. Little time was given us to draw you together, and but little for you to prepare; and we are sorry that we could not find room for all who at last desired space.

Ladies, you too have aided us, your presence has lent additional charms to the exhibition's many attractions; your handiwork is represented in many beautiful exhibits—albeit, the bed quilts of an older generation are missing from our walls; new channels are opened to your industry every day, and many of the active trades of this city, as here represented, prosper under your directions. It may be significant that this year has even seen some of your names added to the roll of members of this Institute. Those of you who have been requested to act in the undesirable capacity of judges, have done good and satisfactory work.

THE AID OF THE PRESS WARMLY RECOGNIZED.

Gentlemen of the press, we have to thank you for much valuable aid. When the project of this exhibition was first broached, many of you wrote strongly advocating our cause; and appreciating the difficulties of our undertaking, lent efficient encouragement. Those of you who spoke only kind words when our task was the hardest, are remembered as our staunch friends. When the story of this exhibition is published, there will be read a list of names of citizens who having faith in the Franklin Institute, and appreciating the efforts it is always making to foster the mechanic arts, subscribed their names to a paper pledging themselves the amount

set opposite thereto, to hold the Institute free from loss in case the exhibition should not prove pecuniarily successful, many of these are of citizens not members of the Institute; it is now reasonably certain that they will not be called upon to pay any loss; in fact, it is hoped that some much needed money will be added to our treasury, and the Institute will be better able to go on with its work. When these gentlemen signed their names, they had nothing to assure them that they would not be called upon for the money; other exhibitions of the Franklin Institute had not paid expenses. Why should this? It has doubtless paid, however, and we will rejoice when these kind friends are formally and publicly relieved from their obligations, and most sincerely do we thank them for their help.

Fellow-citizens, the hour draws near when the curtain will fall and hide from sight this bright scene. The names of many hundreds of you have this year been added to our roll of members. You have lent your aid thus far, you will surely continue to take part in the work of the Institute. Let not your interest end when these doors are closed; be present at our meetings; give us the advantage of your varied experience; aid our journal, the only publication devoted to the promotion of the mechanic arts, not controlled by local interest or biased by personal prejudice; aid it with your pens and purses.

SOME WORDS AS TO THE COMING CENTENNIAL.

Whether in the coming years we re-open our doors for such a display as this, is yet undecided. If we do not, it will be for good and important reasons. The year of the great Centennial is close upon us; little by little over the land has grown the interest in it. Slowly, but surely, are all our people awakening to the appreciation of the fitness of the celebration of a nation's birthday by a display of a nation's greatness, of a nation's growth in contest with the whole world, on the ground where one hundred years ago stood the capitol of the Infant Republic, in the city where our liberty had birth. The objects that will claim space in that great exhibition are now being made, not here only, but over the whole civilized world. What can be done by the Franklin Institute as a society, or by its members as individuals thereto, should tend toward increasing the success of that great undertaking. There, in yonder Park, among the green trees and by our beautiful river, away from the noises and bustle of the streets of a great city, acres upon acres of buildings will be crowded with the industries, the arts of the whole world. At the thought of such a display, what is here seen in this room seems small indeed. What is prominent here will appear less so in those vast halls; but bear in mind the perfection of the whole depends upon the perfection of its individual parts. Each one of you who contributes examples of his industry, arts or accomplishments to that great exhibition must do so with the confident belief that the burden of sustaining the credit of our country in that contest rests with him alone.

THE PEOPLE SHOULD FOSTER AND PATRONIZE THEIR OWN PRODUCTIONS.

As president of a society that has for half a century labored zealously to promote the mechanic arts, I dare not lose this opportunity of saying a few words in the interest of American manufacturers. All observant visitors to this hall must have noticed goods displayed as of home make, which they had believed were always imported. Let me tell you, for I know it, there are prosperous industries in this city making goods of excellent quality, which you, ladies and gentlemen, purchase as of foreign make. The maker's of these goods say they would find no purchasers should they mark them as Philadelphia made. Gentlemen, you select at your tailors cloths that you are assured are the best imported goods. This may be so—in fact, really is in many cases—but the production in this country of looms to weave the finer cloths is a growing trade, and these looms send fine clothes into the mar-

ket, which under fancy names are sold. Ladies, I have held in my hand the wool—seen it carded on the finest machines, or combed for worsted yarns on the machines as are used abroad, spun into yarn and woven on American looms into the finest fabrics, you are now wearing—no, I would rather say that some other ladies are wearing, confident in the belief that they are decked in garments made in France, in England, in India—anywhere but in their own land. I will not say who is to blame for this, whether the manufacturer who hides his own name, the tradesman who buys the goods and sells them as imported, or we ourselves who think home-made articles not good enough for us. I would not have you purchase poor workmanship, because it is home-made, in preference to good work from abroad; that will not compel progress in the arts; but I would have you show a preference for what is well done in your own land.

Franklin, in the memory of whose usefulness this Institute was named, discouraged the purchase of foreign finery, when our nation was so poor one hundred years ago. What he saw as a necessity in the light of self-protection then, may be less so now, for a wholesome tariff has shielded our workmen until home competition in well-organized business has enabled us to export what we used to import. The Franklin Institute, which was founded to promote the mechanic arts, asks your aid, your encouragement, and preference for all the good work our mechanics can do.

OFFICERS OF THE FRANKLIN INSTITUTE FOR 1874.

President.—COLEMAN SELLERS.

Vice Presidents.—BLOOMFIELD H. MOORE, HENRY G. MORRIS, ROBERT E. ROGERS, M. D.

Secretary.—WILLIAM H. WAHL, Ph. D.

Treasurer.—FREDERICK FRALEY.

Managers.—Washington Jones, Pliny E. Chase, Charles S. Close, Joseph M. Wilson, William P. Tatham, Dr. Isaac Norris, jr., Theodore D. Rand, George F. Barker, William Sellers, John W. Mystrom, Theodore Bergner, Hector Orr, B. C. Tilghman, Wm. Barnet Le Van, Samuel Sartain, Charles Bullock, Enoch Lewis, William Helm, J. Vaughan Merrick, Henry Cartwright, Henry W. Bartol, F. B. Miles, Edwin J. Houston, J. E. Mitchell.

Auditors.—James H. Cresson, Samuel Mason, William Biddle.

Actuary.—D. Shepherd Holman.

THE INTERNATIONAL ELECTRICAL EXHIBITION OF 1884.

In 1882 an electrical section of the Institute was established and the annual report of February, 1883, suggests the holding of a special exhibition devoted to electricity and its application to the arts.

The suggestion was approved by the Institute and resulted in the decision to hold an International Electrical Exhibition. This was announced to open September 2, 1884, in a suitable building, built for its use, which occupied the block between Thirty-second and Thirty-third streets, on Lancaster avenue. "The main structure was 283 feet in length by 160 feet in width, flanked by a tower 60 feet high at each corner." By a joint resolution of the United States Congress, articles from foreign countries designed for this Exhibition were admitted free of duty. A special committee composed of Dr. Isaac Norris, chairman, Prof. Edward J. Houston, and Dr. William Wahl were appointed to secure a complete collection of the lit-

erature of electricity, to be properly classified, catalogued and displayed for the Exhibition, after which to be deposited in the library of the Franklin Institute as "The Memorial Library of the International Electrical Exhibition."

The Committee on Exhibitions of the Franklin Institute issued a handsomely printed 10-page semimonthly journal for the purpose of imparting preliminary information, called the "Bulletin of the International Electrical Exhibition." The first number appeared June 2, 1884, appearing on the 1st and 15th of each month until the opening of the exhibition in September. Thus the Franklin Institute which, more than a half century ago, organized the first mechanics' exhibition ever held in the United States, shows, by organizing in 1884 the first exhibition exclusively devoted to electricity ever held in this country, that it is still abreast of the world's progress in the practical applications of science to industry.

The following brief extracts from the general Report of the Committee* will suffice to give a succinct account of this novel, brilliant and successful exhibition; showing the progress then attained, in this comparatively new field of invention which has so recently attracted widespread interest.

This handsomely printed report is profusely illustrated with photographic views of the exhibition which was notable for the artistic and brilliant effects produced by novel applications of the new agent, with its variety of lights and combinations of color effects.

The following Committee were in charge of the preparation of the report. Messrs. Charles H. Banes, Edwin J. Houston and William H. Wahl.

INTERNATIONAL ELECTRICAL EXHIBITION, 1884. FRANKLIN INSTITUTE, PHILADELPHIA, PA.

To the Board of Managers, Franklin Institute:

GENTLEMEN: I have the honor to present herewith a General Report—Historical and Descriptive—of the International Electrical Exhibition.

Respectfully,

CHARLES H. BANES,

Chairman of the Committee on Exhibitions.

PHILADELPHIA, *March*, 1885.

GENERAL REPORT OF THE CHAIRMAN OF THE COMMITTEE ON EXHIBITIONS.

FORMER EXHIBITIONS.

The Franklin Institute was founded in 1824, for the purpose of promoting the mechanic arts. It has progressively carried out the intention of its founders by means of courses of popular scientific lectures, schools for drawing, experimental

* 1884—International Electrical Exhibition—1884 of the Franklin Institute, of the State of Pennsylvania, for the Promotion of the Mechanic Arts. General Report of the Chairman of the Committee on Exhibitions. [Issued by authority of the Board of Managers and published as a supplement to the Journal of the Franklin Institute, July, 1885.] Philadelphia: The Franklin Institute 1885.

tests of new inventions, by work of original research in its laboratories, and through the Committee on Science and the Arts. In addition to this, exhibitions of manufactures and processes in the arts have been given at various periods in the history of the Institute, commencing at a very early date. These displays have attracted throngs of visitors and have always been anticipated by our citizens with a great deal of interest. The last of these, prior to that of 1884, was held in 1874, and proved equally attractive as those preceding, and was in every way a successful one.

Since the close of the Centennial Exhibition in 1876, the Institute has taken no part in any display of the mechanic arts, being deterred from doing so, partly on account of the overshadowing influences of its magnitude and more especially for the reason that Philadelphia, the city noted for its skilled mechanics and extensive industries contain no available structure that can be used for a collective exhibition representing their varied work.

ORIGIN OF THE EXHIBITION.

The recent Electrical Exhibitions held by France, England, Germany and Austria, impressed the Committee on Exhibitions with the fact that electricity, in its applications, had long since passed from the experimental period to that of permanence and practical necessity, and is to-day attracting a large share of public attention. Influenced by this thought the Chairman of the Committee on Exhibitions suggested to the Board of Managers of the Franklin Institute, at their meeting, December 13, 1882, "That the Institute should take steps to hold an exhibition of electric lighting and of the machinery pertaining thereto." * * *

SITE FOR THE BUILDING.

In the progress of preparations one of the first difficulties encountered was the selection of a proper and suitable location for the erection of a building. After considering a number of properties and encountering as many disappointments, the difficulty was met by the liberality of the Pennsylvania Railroad Company in the offer, upon nominal terms, of the lease of a vacant lot of ground belonging to that company situated between Thirty-second and Thirty-third streets, and Lancaster avenue and Foster street, Philadelphia, containing 66,645 square feet. This proposition was made through Mr. William Sellers, a member of the Board, and at the same meeting, June 13, 1883, it was unanimously accepted and arrangements made for the preparation of a lease. This was authorized to be signed December 12, 1883.

BUILDING PLANS.

Preparations for plans of the buildings to be erected were commenced by Mr. Joseph M. Wilson, who was appointed Architect, by the Board. * * *

THE GENERAL CLASSIFICATION OF THE EXHIBITS.

And the synopsis of the same, was prepared by a subcommittee, of which Prof. Pliny E. Chase, of Haverford College, was chairman. Especial attention is called to the work of this committee, on account of the labor performed and the fidelity with which it discharged a duty requiring much thought and study as well as familiarity with the productions and applications of electricity. The work has been highly commended by scientists and experts, and is in itself a complete index of electrical progress, as recorded in the literature of the subject at the date of the exhibition.

SUPERINTENDENT AND ELECTRICIAN.

In April, 1884, Prof. William D. Marks, of the University of Pennsylvania, accepted the position of General Superintendent, and Prof. Edwin J. Houston, of the Central High School, Philadelphia, of the position of Electrician. These gentlemen brought to the

duties of their positions that energy, enthusiasm and special fitness that tended so largely to the success of the exhibition. They were untiring in their efforts, and under circumstances of unusual difficulty commanded the respect of those with whom they came in contact.

For the purpose of securing the highest possible safety, both to life and property, a Committee for the Installation of Electrical Apparatus was appointed, consisting of Prof. Edwin J. Houston, Chairman, Henry Morton, Charles M. Cresson, M. D., W. P. Tatham and M. B. Snyder. A code of carefully prepared rules was adopted, and exhibitors were requested to give their co-operation in carrying them into effect.

These rules were carried into effect under the able personal direction of the Electrician, Prof. Edwin J. Houston. Their actual application demanded constant and untiring attention on the part of the Electrician and his assistants, so as to meet the requirements of particular cases as they arose. Not only electrical skill, but practical knowledge was required in order to safely conduct through a frame building the intricate net work of wires to supply the various exhibits. The able manner in which this was accomplished even in its minutest details, is witnessed by the fact that although many of the arc light circuits had an electro-motive force of as high as 3,000 or 3,500 volts, no single accident to life, or alarm of fire, occurred in the buildings during the entire period of the exhibition.

The circuits were tested daily for "contacts" or "grounds" by Prof. Houston, or by his assistant Mr. Carl Hering, and all causes of danger removed before the current was permitted in them.

Mr. Hering, the assistant electrician, rendered valuable and able services not only to the Electrician in aiding the testing and the location of the various circuits in the building, but also to the committees appointed by the Institute for making tests and measurements. He was specially fitted for these duties by his laboratory experience and the information acquired during the Vienna Electrical Exhibition of 1883, where he officially represented the Franklin Institute. * * *

OPENING CEREMONIES.

The exhibition was opened at the time indicated in the advertisements, September 2, 1884. The ceremonies began in the building lately used as the station of the Pennsylvania Railroad, loaned to the Institute, and used as the Annex. It was connected with the main buildings by means of a bridge over Thirty-second street, and reached by a broad flight of stairs, leading from the north avenue of the station. The large waiting room had been extensively repaired and placed in complete order, a lecture platform and large screen for illustrations erected at the north end, and two special apartments set aside in the southern portion for historical and bibliographical displays. The recently bare walls were rendered attractive with very large maps of the hemispheres, upon which were shown the locations of the submarine cables and of the principal overland wires. These were executed in distemper by a prominent scenic artist of Philadelphia from designs collated by Prof. Houston. Above the market entrance, the wall was decorated with red, white and blue bunting. The front and sides of the platform were completely hidden from the audience by growing plants. The space above the rear of the platform was tastefully decorated with the national colors.

The invited guests, among whom were representatives of foreign governments, scientists and many distinguished citizens assembled in the lecture hall at noon. After an overture by the Germania Orchestra, Hon. George H. Boker, Chairman of the Committee on Ceremonies, introduced His Honor, Mayor Smith, who welcomed the guests to Philadelphia. The procession was then formed and moved across the bridge to the main building where thousands of people had already assembled. After prayer, by Rev. Dr. J. S. McIntosh, William P. Tatham, President of the In-

stitute, delivered the opening address, and at its conclusion, introduced Governor Robert E. Pattison, who in well chosen words declared the exhibition open. At the touch of an electric button by the wife of Prof. Marks, the Superintendent, the machinery started and electric lights flashed in every part of the large structure. The opening scene was one of great attraction and brilliancy.

The educational features of the exhibition were appreciated by its managers, and every effort was made to utilize this opportunity for the benefit of the pupils of the public schools of the city, as well as for all other educational institutions, as the following extracts show:

Impressed with the fact that foreign electrical exhibitions had been attended with pecuniary loss to the projectors, the committee determined to awaken a special interest in the colleges and schools of the country, for the purpose of inducing a large attendance of scholars as visitors. Nor was this motive entirely mercenary, for it became evident early in the preparations, that the educational facilities would be unsurpassed and ought not to be neglected. With this view, Mr. G. Morgan Eldridge, Chairman of sub-committee on schools, addressed communications to a large number of schools throughout the country, announcing the character and peculiar attractions of the exhibition, the arrangements made for transportation, and the reduced price of admission for schools visiting in a body. In response to a proposition made to the Board of Education of Philadelphia, the public schools of the city of the grades of high, normal, grammar, and unclassified, were granted each one day of vacation during the school term to attend the display. As the result of these arrangements, the official record of admissions shows an attendance, as organizations, of 97 schools, with 740 teachers and 16,657 students. In addition to these formal visits, there was an attendance at different periods of a number of sections and single classes.

To facilitate the work of teachers in making the visits profitable to their pupils, arrangements were effected with professional men, familiar with electrical matters, to act as guides in explaining the uses of the machines, and the theories of electricity to the young visitors and without cost to them. This scheme proved of great value as a series of interesting object lessons.

A special inducement for study and observation of exhibits was offered the scholars of the public schools in the offer of prizes, consisting of a five dollar gold piece, and an honorable certificate of the Franklin Institute for the best compositions upon the subject, "What I saw at the Electrical Exhibition." The number of prizes distributed amounted to eighty, of which sixteen were secured by the High and Normal Schools, and the remainder by the Grammar and Unclassified Schools. In addition to these awards, two special prizes of ten and fifteen dollars were added by the "Electrical World," of New York. These were distributed, with appropriate ceremonies, before a large audience assembled at the Normal School building, Thanksgiving night, Nov. 27, 1884.

The preparation for the plans to enlist the interest of the public schools and the laborious details incidental to the distribution of tickets, and the collection of the payment of the same, was voluntarily undertaken by Prof. James MacAlister, Superintendent of Public Schools, in Philadelphia. In addition to this work he also placed the committee under great obligations by his arrangements for, and personal attention to the selection of the prize compositions. In the discharge of this last duty Prof. MacAlister was ably assisted by Prof. Vogdes, of the High School, and by the Secretary of the Institute.

LECTURES.

To add still further to the educational attractions, arrangements were made for an excellent course of lectures, under the care of a committee appointed for the

purpose. The report of the Chairman is annexed and will be found of interest, as illustrative of the high character of the lecturers in their various specialties. For the public schools a special course upon electrical subjects was delivered by Prof. Houston. The school lectures were profusely illustrated and although necessarily elementary were exceedingly interesting and profitable. Two were given each day during the visits of the schools, covering a period of three weeks, and the close attention of large audiences was held during the time of delivery. Prof. Houston was greatly assisted in this work by the liberality of Jas. W. Queen & Co. in furnishing, as a loan, a large variety of apparatus under the care of trained assistants. Valuable aid was also given in the illustration of electric currents by the Edison Co. This latter service required the special work of their large dynamo. Numerous testimonials to the value and usefulness of Prof. Houston's course have been received. * * *

PRIMERS OF ELECTRICITY.

* * * In addition to this information a series of elementary papers called "Primers of Electricity," were written by Prof. E. J. Houston. These were printed on four and eight pages, illustrated, and were sold at a nominal price. Over eighty thousand were disposed of, and they became very popular and useful to visitors and young students. Notwithstanding the low price at which they were sold they proved a source of considerable revenue to the Institute.

Among the varied attractions for the ever-shifting throngs was abundant music, produced under unusual conditions; and, also, novel combinations of color and light. The playing of organs by means of electrical communication between the instrument and a distant player seemed always to interest a circle of charmed listeners; while the large fountain, in which striking effects were produced by means of many colored electric lights shown in combination with the beauty of flowing water, gave unending delight to the spectators.

THE ATTENDANCE.

The total number of admissions was 282,779. The cash sales of tickets amounted to \$98,639.70. In addition to the schools, visiting in a body, there were a large number of other organizations, industrial and scientific, that attended the exhibition during its progress. Among the latter were the United States Electrical Conference, the American Association for Advancement of Science, the British Association for the Advancement of Science, the Royal Society of Canada, the American Institute of Electrical Engineers, the American Institute of Mining Engineers, the New York Electrical Society, the Agassiz Association, the Inter-Collegiate Association of Alumnæ, and others.

The opportunity was not allowed to pass without leaving a valuable permanent record in the Library of the Institute, as the following extract shows :

COMMITTEE ON BIBLIOGRAPHY.

The report of the Committee on Bibliography charged with the special duty of preparing a collection of books and pamphlets relating to the subject of electricity and magnetism, shows as the result of their work a memorial library, consisting of volumes, bound and unbound, monographs and pamphlets, numbering 2,976. There was also contributed about one thousand dollars in cash. In soliciting the co-operation of English and Continental book publishers the committee was favored

with the valuable assistance of Mr. Frederick Ransome, member of Institute, residing in London, and Mr. Coleman Sellers, at the time in England, and a representative of the Franklin Institute, by invitation, to the ter-centenary of University of Edinburgh, and Mr. Leopold Bossange, of Paris. The library, in accordance with the proposition contained in the invitation to donors, was formally presented to the Franklin Institute at the close of the exhibition. It will be preserved and increased as new books may be secured and will prove of great value for reference and study. The catalogues of books and subjects is well worthy of examination and was prepared with a great deal of care by Mr. E. Hildebrand, librarian. Dr. Isaac Norris, jr., and his colleagues of the committee, Messrs. Wahl, Houston, and De Motte, were indefatigable in pushing the work to the success it attained. In this connection it is proper to acknowledge the valuable services voluntarily rendered, not only as a member of this committee, but in other departments, especially that of lectures and historical display, by Prof. John B. De Motte, of Du Pauw University, Greencastle, Indiana. The trustees of this institution kindly extended a leave of absence for several months to the Professor so that he might assist in the work of the Institute.

In addition to the record of progress in the science of electricity as set forth in this special library a series of most interesting and instructive object lessons illustrating the evolution of the science, from the day when Franklin first drew down the lightning from the clouds above the Philadelphia meadows, was shown in a most interesting historical collection of machines and models, invented during the past century for utilizing the strange power. These had been brought together through the aid of the U. S. Patent Office.

SPECIAL HISTORICAL EXHIBIT.

In order that the progress of electrical science might be traced from its earliest history, by visitors and students, it was deemed advisable to prepare a special historical exhibit. In the rooms set apart for this purpose many valuable machines and models, loaned in response to requests of the committee, were arranged and attracted a great deal of attention. The historical report will present a list containing almost every invention of value in marking the development of electrical science. The most conspicuous in extent was the exhibit of the United States Patent Office. Over two hundred models, many of them of rare interest, were arranged on tables and so labeled as to clearly indicate their title and purpose. A complete list appears in the catalogue, and the committee appreciate the kindness of the Commissioner of Patents, and Mr. C. J. Kintner, examiner in electricity, manifested in the loan and preparation of this display. Many individuals and firms added interest to the collection by sending machines of value. Prominent among the latter was the exhibition of Messrs. Wallace & Sons, Ansonia, Conn., this firm forwarded nine machines, among them the magneto-electric telegraph, for the development of power at a distance from its source. This was used at the Centennial in 1876. In order that the Wallace machines could be supplied with power, they were assigned a special location in the main building. The Franklin Institute added to the interest of the collection by depositing some of the original Franklin apparatus.

No portion of the vast collection in the electrical exhibition afforded greater interest for the thoughtful than the historical display. So great has been the progress in improvement since the House telegraph patent of 1846, the electric light patents of 1861, and the telephone patents of a still later date, that the famous first message of Prof. Morse has become a fitting legend for electrical progress, "What hath God wrought!"

GOVERNMENT EXHIBITS.

From the beginning of the work the exhibition Committee had the cordial co-operation of the Executive and the heads of Departments of the Government. These efforts were restricted, however, by the want of funds. Congress, while appropriating large sums of money to exhibitions at New Orleans and other cities, did not see fit to assist the Philadelphia exhibition except by resolutions. This failure rendered it necessary for the Franklin Institute to bear the expense incidental to the transportation and installing of Government exhibits, and no money was spared to have the display made in a creditable manner. The following Departments were represented by interesting collections:

Ordnance Department, U. S. Army, in charge of Captain O. E. Michaelis.

Ordnance Department, U. S. Navy, in charge of Lieutenant Bradley A. Fiske.

U. S. Coast and Geodetic Survey, Treasury Department.

Smithsonian Institution.

U. S. Signal Office, in charge of Sergeant A. Eccard.

These exhibits embraced instruments of precision as well as electrical apparatus. An attractive feature in the contributions of the U. S. Navy was a search light of great power. This was mounted upon the north-east tower of the main building, and at night proved an object of great interest and wonder as its powerful rays of light illumined distant parts of the city. The thanks of the committee are due to the heads of Departments, and to the officers in charge for their efficient aid.

LIGHTING THE BUILDING AND GROUNDS.

The electric lights in the buildings were furnished proportionately, and without charge by all companies having dynamos on exhibition. The main arch and galleries were illuminated by arc lights and the other portions of the main building by incandescent lamps. The lecture room in the annex was exceedingly well lighted by the tasteful chandeliers of the Edison Company, the current being furnished by their large dynamo, popularly known as "Jumbo." The restaurant adjoining the lecture hall was lighted without cost to the exhibition by the Siemens Regenerative Gas Company. This latter arrangement was entered into for the purpose of affording the public an opportunity to compare the methods of illuminating. The light furnished by the Siemens Company was quite satisfactory, and at the same time their process of combustion assisted materially in keeping the room ventilated.

Outside the buildings, and fixed with brackets to the side of the structure, there was a cordon of arc lights of the Brush Electric Company of Cleveland. The grounds about the buildings and annex were lighted in like manner by the Thomson-Houston Company. To accommodate visitors arriving and departing by the Powelton Avenue station of the Pennsylvania railroad, located three squares from the exhibition, the Van De Poele Company of Chicago run a series of arc lights along the sidewalks the entire distance. In addition to this exterior lighting for practical uses, the brilliancy of the scene was still further enhanced by the display of lights from the towers by the companies named, and also by a large collection of Edison white and colored incandescent lamps, forming a star of dazzling beauty, and seen at a long distance from its location on the southeast tower.

In connection with the exhibition an assembly of electrical experts was convened.

UNITED STATES ELECTRICAL CONFERENCE.

Prominent among the list of scientific associations that visited the exhibition was the United States Electrical Conference. In May, 1884, an act of Congress was

approved by the President, authorizing the appointment of a scientific commission "which may, in the name of the United States Government, conduct a national conference of electricians in Philadelphia in the autumn of 1884." By virtue of this bill the "United States Electrical Commission" was created for the purposes set forth. Professors Henry A. Rowland, George F. Barker, Simon Newcomb, C. F. Brackett, J. Willard Gibbs, John Trowbridge, F. C. Van Dyck, Charles A. Young, M. B. Snyder, E. J. Houston, Dr. W. Wahl, and Mr. R. A. Fisk, comprising the board, issued invitations to a large number of scientific gentlemen, both foreign and American, to assemble in conference. There was a large number of acceptances, and the meetings were held in September, first in the lecture hall of the exhibition and afterward at the building of the Franklin Institute. A perusal of the report of papers read and the discussions consequent thereon confirms the statement of the preamble to the bill creating the commission that "The International Electrical Exhibition offers a rare and fitting opportunity for such an official assemblage of electricians." The members of this commission manifested a cordial desire for the success of the exhibition and the endeavor to gather from the display the fruits of scientific tests and examinations.

* * * Among the foreign visitors to the exhibition were many scientific men of world-wide reputation. Prominent in the lists are recorded Sir Wm. Thomson, Lord Rayleigh, Prof. Sylvanus P. Thompson, W. H. Preece, Prof. George Forbes, Lieuts. F. R. De Wolski and Chrisolm Batten, official representatives of Great Britain; Prof. Tchisuke Fujoka, Tokio, Japan; F. N. Gisbourne, Government electrician for Canada; Señor Enriquá A. Mexia, official representative of Mexico, and others whose names appear among the members of the Electrical Conference.

The report of the treasurer shows the exhibition to have been a financial success. The entire expense of erection of buildings, the cost of shafting, steam piping and general preparations, as well as the running expenses, were promptly met and a balance of a few thousand dollars left in the treasury. This was accomplished without Government aid, or the use of public moneys.

As has already been stated, there was no fire or alarm during the entire period. Nor was there a panic at any time in the immense crowds of visitors, and an entire freedom from accidents and loss of life or injury to employes or visitors. When it is remembered that the buildings, temporary in character and constructed of inflammable materials, were filled with machines that ignorance or carelessness might turn into engines of destruction, the care of Divine Providence is manifested. To Him shall we render our thanks.

Respectfully submitted.

CHARLES H. BANES,
Chairman.

As in the 1874 exhibition a large guaranty fund was subscribed by liberal citizens; fortunately both exhibitions proved very successful in a pecuniary point of view and largely increased the funds of the Institute.

This report is accompanied by the reports made by the various special committees for which, though they are full of interest, space is wanting.

The following lists give the names of the officers of the Institute for the year 1884, and of those members to whose efforts the success of this valuable exhibition was largely owing.

OFFICERS AND MANAGERS OF THE FRANKLIN INSTITUTE FOR 1884.

President, WM. P. TATHAM.
 First Vice President, J. E. MITCHELL.
 Second Vice President, FREDERICK GRAFF.
 Third Vice President, CHARLES BULLOCK.
 Secretary, WM. H. WAHL.
 Treasurer, SAMUEL SARTAIN.

MANAGERS.

William Sellers.	Washington Jones.	Enoch Lewis.
Hector Orr.	Joseph M. Wilson.	William H. Thorne.
Prof. Wm. D. Marks.	Coleman Sellers.	Prof. E. J. Houston.
Henry R. Heyl.	Dr. Isaac Norris, jr.	John J. Weaver.
Frederick Fraley.	J. Vaughn Merrick.	Prof. Pliny E. Chase.
William Helme.	Cyrus Chambers, jr.	Theodore D. Rand.
Charles H. Banes.	Charles J. Shain.	C. Chabot.
Dr. Persifor Frazer.	Prof. Robert E. Rogers.	A. E. Outerbridge, jr.

APPENDIX.

COMMITTEE ON EXHIBITIONS.

Charles H. Banes, <i>chairman</i> .	W. W. Griscom.	W. J. Phillips.
Murray Bacon.	William Helme.	Theodore D. Rand.
John Baird.	Carl Hering.	Robert E. Rogers.
Hugo Bilgram.	Henry R. Heyl.	Charles E. Ronaldson.
David Brooks.	Thomas Hockley.	Samuel Sartain.
Charles Bullock.	Edwin J. Houston.	Coleman Sellers.
Addison B. Burk.	Washington Jones.	Coleman Sellers, jr.
C. Chabot.	Wm. Barnt Le Van.	Horace W. Sellers.
Cyrus Chambers, jr.	H. H. Levette.	William Sellers.
Pliny E. Chase.	Enoch Lewis.	E. Alex. Scott.
Luther L. Cheney.	J. H. Linville.	Chas. S. Shain.
William B. Cooper.	Edward Longstreth.	M. B. Snyder.
Chas. M. Cresson.	C. Wesley Lyons.	Louis H. Spellier.
Henry C. Davis.	Wm. V. McKean.	William P. Tatham.
Luigi D'Auria.	William D. Marks.	Wm. H. Thorne.
N. H. Edgerton.	S. R. Marshall.	Jules Viennot.
G. Morgan Eldridge.	J. Vaughan Merrick.	Lewis S. Ware.
Raphael Ettrada.	Joseph E. Mitchell.	John J. Weaver.
Charles Faser.	Henry Morton.	S. Lloyd Wiegand.
Frederick Fraley.	John B. De Motte.	Joseph M. Wilson.
Persifor Frazer.	Isaac Norris, jr.	William H. Wahl, <i>secretary</i> .
Frederick Graff.	Hector Orr.	
	A. E. Outerbridge, jr.	

SPECIAL COMMITTEES.

Superintendent.—William D. Marks.
Electrician.—Edwin J. Houston.
On Finance.—Frederick Fraley, chairman.
On Space.—Charles Bullock, chairman.
On Transportation.—Enoch Lewis, chairman.
On Classification.—Pliny E. Chase, chairman.
On Bibliography.—Isaac Norris, jr., chairman.

On Buildings and Machinery.—Frederick Graff, chairman.

On Rules and Regulations.—Coleman Sellers, chairman.

On Custom-House Regulations.—Charles Bullock, chairman.

On Correspondence and Publication.—William H. Wahl, chairman.

On Historical Electrical Apparatus.—Edwin J. Houston, chairman.

On Electrical Installation.—Edwin J. Houston, chairman.

On Admissions.—Samuel Sartain.

On Board of Examiners.—M. B. Snyder, chairman.

At the annual meeting of the Institute, January 20, 1885, President Tatham, in his report, recited the successful holding of the Electrical Exhibition and paid due praise to the various committees whose efforts produced such a happy result. He also announced the decision to hold another exhibition in 1885 to be called "The Novelties Exhibition," and stated that steps for securing a guaranty fund had been taken.

At this meeting Col. Charles H. Banes, chairman of the Memorial Library Committee of the Electrical Exhibition, formally made over the library to the Institute which was as formally accepted by the President, Mr. Wm. P. Tatham, in a most complimentary speech, showing a warm appreciation of the efficient labors of the "Committee on Bibliography."

President Tatham's report of the succeeding year, made to the meeting January 20, 1886, states that "The Novelties Exhibition" opened September 15, 1885, continued through October. The attendance was not satisfactory and the report of President Banes at the meeting of January 19, 1887, recites the situation as follows:

THE EXHIBITION OF 1885 AND THE GUARANTEE FUND.

After the close of the last exhibition, it was deemed inadvisable to hold another upon the location in West Philadelphia.

The Committee was authorized to sell the building, fixtures and material, and after paying the expense of clearing the ground and fencing the lot, to apply whatever sum remained toward any financial deficiency. After this had been done, a careful statement was prepared and reported to the Board, manifesting a loss by the Exhibition of 1885, of about \$7,000. To meet this deficit, it became absolutely necessary to call upon the subscribers to the Guarantee Fund for their proportionate contributions to the loss. The responses to this call in the large majority of cases have been promptly made; there is, however, a balance not yet received of \$1,717.78.

This closes for the present the history of the Exhibitions.

THE INSTITUTE BUILDING.

The hall of the Institute, "a large and substantial structure of blue stone," was built on the east side of Seventh street, midway between Market and Chestnut streets. The corner stone was laid in 1825, and the building was occupied by the society within two years after its organization. The second story was used by the United States courts until 1830, when it was fitted up as a reading room.

The following description, taken from a sketch of the Franklin Institute in the first number of "The Bulletin of the International Electrical Exhibition," dated June 2, 1884, shows the arrangement and occupation of the building of the Institute in 1884, from which it appears that the limit of accommodation for the various departments of the Institute afforded by the present building have been reached:

Upon the first floor are located the lecture room, and the chemical and physical laboratories. The second floor is entirely occupied by the library. This is exclusively scientific and technical in its character and is rapidly increasing. It embraces, in addition to all the standard and current works upon engineering, mechanics, physics, chemistry, metallurgy, etc., complete files of the publications of the principal learned societies of the world, and of the leading scientific and technical serials, besides complete sets of the British, American and French patent reports. The extent and very complete condition of these publications, make the library of the Franklin Institute perhaps the most valuable library of reference upon scientific and mechanical subjects in the United States. For this purpose it is accessible to the public and visitors from all parts of the country constantly consult its shelves.

The upper floor is entirely devoted to the use of the large drawing classes, composed of young men and women pursuing studies in mechanical, architectural, and free-hand drawing. The drawing school has been carried on uninterruptedly since the establishment of the Institute, and at present is in a most flourishing condition both as to the efficiency of its means of instruction and the number of its pupils.

The rapid growth of the library and schools of the Institute of late years has taxed the ingenuity of its officers to the utmost to carry on its work effectively, the accumulation of books, models, instruments, etc., having become so great as to make it almost imperative to secure more ample quarters. In the collections of the Institute are some interesting historical relics, among which may be named the original electrical machine of Dr. Franklin, Godfrey's original quadrant, the original telegraphic apparatus of Morse, models of Oliver Evan's high-pressure engine and others of less importance.

THE EDUCATIONAL FEATURES OF THE INSTITUTE.

The changes in educational needs, and therefore in the provisions made for them in these supplementary schools, were referred to at the opening of this chapter; it will be seen that the Franklin Institute proved no exception to this general rule.

The High School, carried on by the Institute, contained over 300 scholars in 1827, and was continued until the State provided similar instruction. It was fully attended and of excellent standing. The drawing schools were established in 1824, and have been maintained ever since; these are now the only classes taught.

The educational purpose of the Institute is to give instruction fitted for practical mechanics—to train the apprentice for actual work in the shop, and, as affording efficient teaching in this direction, the drawing classes of the Institute have been of the greatest service. The tuition fees are \$5 per quarter of twenty-four lessons, two quarters per annum.

For art students, the schools of The Pennsylvania Academy of the Fine Arts have been available.

The special reports made by the Institute member of the Board of Trustees of the "Pennsylvania Museum and School of Industrial Art," as the permanent institution resulting from the Centennial Exposition is called, form an interesting feature of the annual reports of the Institute. These concise statements give an admirable summary of the development and history of that institution.

MEMBERSHIP.

The members of the Institute are divided into four classes, as follows: Contributing members, who pay \$5 each year; life members, who are subject to no annual dues, but who have paid \$50 in any one year; first-class stock members, who have purchased shares at \$10 each, which have no dues and confer no privileges of membership other than the right to vote at the annual election of officers on payment of \$1 on each share; and second-class stock members, who pay \$3 annually and are entitled to all privileges of the Institute, including two tickets to the lectures. Minors holding a share of second-class stock, by paying one dollar and fifty cents per year, have the use of Library and Reading Room, and admission to Lectures.

In 1880 a list of members of the Institute was published, showing a total membership of 1,437. Of these 653 were contributing members, 504 life members, 131 first-class stock members, and 140 second-class stock members; 9 members on the list were unclassified. The annual reports show various changes of membership, resulting in an average yearly gain of about 100 members. The total membership at the close of 1887 is reported as 2,155.

The first committee, that on "Instruction," is the one which has charge of all matters with which this report is particularly occupied.

THE INFLUENCE EXERTED BY THE FRANKLIN INSTITUTE.

The precedence, in time, of the founding of the Franklin Institute; its example, inciting to the establishment of similar organizations in other cities; its important direct and indirect influence upon many phases of national development, as well as upon elementary and technical education in the city of Philadelphia—witness the relations held by it, through Dr. Jones and his Journal, to the national patent system and its history; the fact that the future Architect of the Capitol at Washington received his first upward impulse and elementary technical training in its schools, and its claim of having been first to suggest the holding the Centennial Exhibition, as already recorded in the extracts from the Ledger article; all combine to give exceptional interest, to the history of this Association of Mechanics.

An Institute which has counted among its active members men of such recognized eminence as scientists and educators as Dr. Thomas P. Jones, the founder of the Franklin Journal; Alexander Dallas Bache, who organized the "Committee on Science," and who left the Institute only to assume the position of Superintendent of the Coast Survey of the United States; Professor John C. Cresson; Professor Henry Morton, long Secretary of the Institute, editor of the Journal, and now president of the Stevens Institute, Hoboken; Professor Robert E. Rogers; and Professor George F. Barker, of the University of Pennsylvania, who, in 1874, assumed the editorship of the Franklin Journal, is surely entitled to take rank in the United States among the leading institutions for the promotion of science.

While a local institution, whose list of presidents contains such names as fill the roll of the Institute, namely, James Ronaldson, Samuel V. Merrick (the original founder of the Institute), Professor John C. Cresson, William Sellers, John Vaughan Merrick, Professor Robert E. Rogers, and Coleman Sellers, needs no better indorsement in the city of Philadelphia.

The early opening of the drawing classes of the Institute gives it precedence in the movement for the better technical training of mechanics; while the fact that the "School of Design for Women" was founded by it as long ago as 1850, entitles it to consideration in any account of the movement for the training of women in Industrial Art; these two acts link it to the whole industrial and artistic educational movement which has, in recent years, become such a feature in education, and has given such an impulse to industrial and artistic development in many parts of the United States; while the initiation of the movement which culminated in the success of the Centennial Exhibition is an instance of a direct impulse given by a local institution to the industrial and artistic development of a whole people.

In this connection the following list showing the succession of the chief officers of the Institute from its origin, for which I am indebted to the courtesy of Mr. William H. Wahl, the present secretary, is not without interest:

The presidents of the Institute in order of election were:

- James Ronaldson, 1824-1842.
- S. Vaughan Merrick, 1843-1854.
- John C. Cresson, 1855-1863.
- William Sellers, 1864-1866.
- J. Vaughn Merrick, 1867-1869.
- Coleman Sellers, 1870-1874.
- Robert E. Rogers, 1875-1878.
- William P. Tatham, 1879-1886.
- Charles H. Bones, 1886-1887.
- Joseph M. Wilson, 1887-

To the year 1864, the office of Secretary was an honorary one and was filled in

order by Frederick Fraley, Alex. Dallas Bache, Chas. B. Trego, J. B. Garrigues, and John F. Frazer.

In that year the Institute was reorganized, the Secretary made a resident officer, with executive functions and with duties of a scientific and literary nature.

The Secretaries have been

Henry Morton,, 1864-1869.

William H. Wahl, 1870-1874.

J. B. Knight, 1875-1878.

Isaac Norris, jr., 1878-1880.

William H. Wahl, 1881, to date.

The Actuaries of the Institute have been:

William Hamilton, 1828-1871.

and D. Shepard Holman, 1871.

OFFICERS AND MANAGERS OF THE FRANKLIN INSTITUTE OF PENNSYLVANIA CHOSEN AT THE ANNUAL ELECTION FOR 1888.

President (to serve one year), JOHN M. WILSON.

Vice President (to serve three years), W. P. TATHAM.

Secretary (to serve one year), WM. H. WAHL.

Treasurer (to serve one year), SAMUEL SARTAIN.

Managers (to serve three years), Hugo Bilgram, Cyrus Chambers, jr., G. Morgan Eldridge, Henry R. Heyl, Chas. Hare Hntchinson, Samuel R. Marshall, Chas. E. Ronaldson, William Sellers.

Auditor (to serve three years), Louis S. Ware.

Members of the Committee on Science and the Arts (to serve three years): J. M. Emanuel, Prof. L. B. Hall, John Haug, Henry R. Heyl, C. W. Howard, Fred E. Ives, W. M. McAllister, H. Pemberton, jr., Philip Pistor, Prof. S. P. Sadtler, T. C. Search, Thomas Shaw, Louis H. Spellier, W. Rodman Wharton, Moses G. Wilder.

The following statistics of the present membership and financial condition of the Franklin Institute are from the Annual Report of the Board of Managers for the year 1890.*

MEMBERS.

Members at the close of 1889.....	2,224
Number of new members elected who have paid their dues.....	192
	<hr/> 2,416
Lost by death or resignation.....	89
Dropped for non-payment of dues.....	158
	<hr/> 247
Total membership at close of 1890.....	2,169

FINANCIAL STATEMENT.

Balance on hand January 1, 1890.....	\$2,172.33
Receipts:	
Contributions from members.....	\$6,679.75
Certificates of stock, second class.....	30.00
Interest on investments of institute's funds.....	1,654.00
Interest on investments of building fund.....	353.09
Temporary loan.....	2,000.00
Cash from other sources.....	9,264.39
	<hr/> 19,891.23
	<hr/> 22,153.56

* See page 151 et seq. of the Journal, for February 1891.

Payments :

Committee on Library	\$2,366.13
Committee on instruction	2,236.77
Curators	1,938.37
Salaries and wages	4,145.00
Insurance	450.00
Temporary loan	2,000.00
Interest on temporary loan	60.97
Other expenditures	8,298.61
	<hr/> \$21,495.85

Balance on hand December 31, 1890 657.71

The Board regrets the failure to secure sufficient subscriptions for the proposed building fund. The receipt of the legacy from the late George S. Pepper, already amounting to nearly \$24,000, with a prospective addition from the residuary estate, is gratefully acknowledged; as is, also, the large increase to the Bloomfield H. Moore fund for the Library, which through the recent generosity of Mrs. Clara Bloomfield Moore has been nearly doubled. The usual annual reports from the Committees in charge of the Library, and of the various sections, follow the report of the Board of Managers.

The following list showing the official organization of the Institute for 1891, with which these historical statements are concluded, is taken from the "Programme of Lectures, 1891-1892" issued by the Institute.

ORGANIZATION.

OFFICERS AND MANAGERS OF THE FRANKLIN INSTITUTE.

President.—JOSEPH M. WILSON.

First Vice-President.—EDWARD LONGSTRETH.

Second Vice-President.—CHARLES BULLOCK.

Third Vice-President.—W. P. TATHAM.

Secretary.—WILLIAM H. WAHL.

Treasurer.—SAMUEL SARTAIN.

Auditors.—W. A. CHEYNEY, W. O. GRIGGS, SAMUEL H. NEEDLES.

Actuary.—H. L. HEYL.

Librarian.—ALFRED RIGLING.

Board of Managers.—Joseph M. Wilson, *ex officio*, *Chairman*, Charles H. Banes, Henry Bower, Charles Bullock, *ex officio*, George V. Cresson, Persifer Frazer, F. Lynwood Garrison, Henry R. Heyl, Edwin J. Houston, H. W. Jayne, Washington Jones, Enoch Lewis, Edward Longstreth, *ex officio*, John Lucas, Samuel R. Marshall, Isaac Norris, jr., Henry Pemberton, jr., Theodore D. Rand, Stacy Reeves, Charles E. Ronaldson, Samuel P. Sadtler, Samuel Sartain, *ex officio*, Coleman Sellers, William Sellers, H. W. Spangler, William P. Tatham, *ex officio*, William A. Thorne, J. C. Trautwine, jr., William H. Wahl, *ex officio*, S. Lloyd Wiegand.

Curators.—Stacey Reeves, Samuel Sartain.

Professors.—Coleman Sellers, E. D., Professor of Mechanics; Persifer Frazer, D. Sc., Professor of Chemistry; Edwin J. Houston, A. M., Professor of Physics.

COMMITTEES.

Of the Institute.—On the Library, William P. Tatham, *Chairman*; on Meetings, Washington Jones, *Chairman*; on Science and the Arts, S. Lloyd Wiegand, *Chairman*.

Of the Board.—On Instruction, William H. Wahl, *Chairman*; on Election and Resignation, John Lucas, *Chairman*; on Stocks and Finance, William Sellers, *Chairman*; on Publications, Edwin J. Houston, *Chairman*; on Exhibitions, Henry R. Heyl, *Chairman*; on Sectional Arrangements, H. W. Jayne, *Chairman*.

THE DRAWING SCHOOL OF THE FRANKLIN INSTITUTE.

As appears in the preceding account of the Institute and its work, the drawing classes were established simultaneously with the formation of the Institute, and have been continued from that time. This indispensable part of the training of a good mechanic was at once recognized as essential. During recent years the methods of the training given have been modified or changed, from time to time, in accordance with the general movement and interest in the subject; for instance, at one time tending more to artistic developments, as when the classes of "the Pennsylvania Museum and School of Industrial Art" found shelter under its roof; and later, tending to the technical training especially adapted to the mastery of "mechanical" and "machine" drawing, as other schools, affording severally opportunities for instruction in elementary, general and artistic drawing, have been opened.

Material is wanting for an account of the early history of the school and of the former methods of teaching; enough is known, however, to justify the conclusion that the attendance and instruction closely resembled that of the Maryland Institute of Baltimore. Pupils attended the night drawing classes and were set to work in making copies from the flat; little attempt being made to grade the scholars, or to teach general principles and a regular course.

Returns made to this Bureau in 1874, show that mechanical, architectural, free-hand and miscellaneous drawing were then taught. Four teachers and 250 pupils, 2 of whom were women, were reported in attendance. The school possessed no casts of statuary, but had a large number of models of machines, etc., and 500 flat drawing copies.

The returns of 1876 show the same number of instructors, but fewer pupils, with a small increase in the number of women pupils, there being a total of 184, of whom 9 were women. Seventy per cent. took mechanical drawing, the others were about equally divided between "architectural" and "general" drawing. Similar returns for 1879-'80 show a great reduction in the number of both teachers and pupils, there being only 2 teachers and 116 pupils; none of whom were women.

The annual reports of the Board of Managers of the Institute affords a running history of the progress of the school.

The first to which I have access, that for the year 1878, records a change in the personnel and management of the school.

An important change was made in improved grading of the pupils and the institution of *Progressive* course of study.

REORGANIZATION OF DRAWING SCHOOLS.

At the close of the spring term of the Drawing School, Prof. L. M. Haupt found himself compelled, by pressure of other duties, to resign its charge, greatly to the regret of the Board.

The school was reorganized, however, in the autumn by Mr. Philip Pistor, M. E., and there was instituted a regular course of instruction, extending over two years, commencing with the more important elementary problems in plane geometrical drawing, and covering so much of descriptive geometry and orthographic and isometric projection, as are necessary to a complete knowledge of mechanical, architectural and topographical drawing.

The instruction in free-hand drawing was discontinued, except as applied to sketches of machines, etc., to be used in making scale drawing and some exercises in the different orders of architecture; leaving all the instruction of purely ornamental and decorative character to other well-known institutions in the city.

The method of teaching adopted omits almost entirely the use of flat copies, depending principally upon blackboard illustrations and exercises in drawing from models.

While this course was strongly recommended to all the pupils, those sufficiently advanced had the opportunity of electing to take special instruction in some branch of more immediate importance to themselves.

The results of the first quarter have been very satisfactory, nearly all the pupils choosing the regular course, and their advance has been very encouraging.

This is an important branch of the work of the Institute, and the Board commends it to the earnest support of the members.

The report for the next year, 1879, records the combinings of the two schools, that of the Museum and School of Industrial Art,* and that of the Institute; by this arrangement both day and evening classes were held, as it was thought with advantage to the interests of both institutions.

UNION OF THE TWO DRAWING SCHOOLS.

The attendance upon the Drawing School has been larger than usual.

In the early part of last summer the Board arranged with the Pennsylvania Museum and School of Industrial Art to combine their efforts in this direction, and consequently the drawing school of that organization is now in satisfactory operation, under one roof, to mutual advantage.

To obtain the room necessary for this purpose, the models have been distributed over the building where they can be seen to most advantage, and the Cabinet of

*The institution incorporated as "The Museum and School of Industrial Art" was a direct outcome of the Centennial Exposition, having been organized by some of the most enterprising and liberal members of the various committees, with a view to secure from the vast collections of the Great Exhibition a permanent typical collection of works exemplifying the application of Art to Industries; and, in order to make such works of the greatest practical utility to found a school of Industrial Art, with the word Art "writ large." Full accounts of these two departments will be found in their proper connection in this Report. The Museum, which occupies the permanent Art Building of the Centennial, is full of interest; while the school, after undergoing various vicissitudes, has achieved an enviable reputation and, under the artistic direction of Mr. Leslie W. Miller, one of the first pupils of Walter Smith in the Massachusetts Normal Art School, has at last obtained a building of its own and secured such support from the manufacturers of Philadelphia as would seem to insure its continued usefulness. I. E. C.

Minerals has been deposited with the Academy of Natural Sciences, subject to recall at any time.

In making this arrangement the Board was aware that the Franklin Institute contributed a larger proportion to the common effort than its proportion of the benefits resulting therefrom. But the managers looked to the objects for which the Institute was erected, and desired to promote them in every way for the benefit of the citizens of Philadelphia.

The result proves the advantages of combination, and it may be profitably studied by other organizations whose special objects are embraced in our own.

The report of the following year, 1880, records the increase in attendance and the consequent necessity for room which compelled the school of the "Museum" to seek another abiding place.

DRAWING SCHOOL, 1880.

The increase in the number of pupils applying for instruction in this department of the Institute is very gratifying to the Board. Mr. Philip Pistor, the Principal of the school, reports 96 pupils attending, and the interest they take in their studies, and the emulation excited by the Bartol scholarship, show that this important work of the Institute is properly appreciated.

The course is a progressive one and includes instruction in mechanical, architectural, and topographical drawing, both free-hand and instrumental, extending over three years; but pupils, if sufficiently advanced, may select any subject of importance to them, and receive in it individual instruction. Three evenings in the week, instead of two, as heretofore, are now devoted to the school, and, as the increase of pupils is about 33 per cent. over last year, it was necessary to give notice to the Pennsylvania Museum and School of Industrial Art that the arrangement of a joint occupation of the rooms would have to cease, and they have accordingly moved elsewhere. The Board regret extremely the necessity of the action, and the severance of the very pleasant relations which have always existed between the two schools.

The report for the year 1881 again records a change in the principalship of the school.

DRAWING SCHOOL, 1881.

No work connected with the Institute has shown greater progress than this, while the number of pupils enjoying the advantages offered by the thorough instruction in this department has been nearly double that of last year, taxing the resources of the Institute and its school rooms to the utmost.

Early in the autumn the resignation of Mr. Philip Pistor from the direction of the school, owing to other engagements, necessitated the choice of a successor, and the committee were fortunate in securing Mr. William H. Thorne to fill the position which had been so ably done by Mr. Pistor. The same general plan of instruction has been followed, with some few changes that experience had shown would be desirable, and the course of instruction extending over two years is a progressive one, as formerly, the classes, however, being frequently re-arranged according to the relative ability and success the pupils display.

Particular attention has been given to the technicalities of drawing, such as the proper selection, the use and care of instruments and materials, the making of clear and perfect lines in pencil and ink, the use of the brush and colors, the relative arrangement of the different views of an object, and other conventionalities of practical draughting. Instruction has also been given in the modern practice of projections, the plotting of mechanical movements and gearing, free-hand sketching from models and patterns, and, in short, as thorough instruction in mechanical

drawing, based upon practical methods, as the time will allow. Special classes in architectural and machine drawing have also been started, but the regular course is the one recommended to the student.

Certificates of merit will also be given at the end of the course and the Bartol scholarships of free instruction in the second term awarded to twelve of the most deserving pupils during the first term.

This drawing school has now been carried on for more than half a century and the Board of Managers are not only unanimously agreed upon its great importance, but that it represents to an eminent degree the useful work of the Institute.

The Report for the year 1882, records the approval by the Board of the management of the new principal :

DRAWING SCHOOL, 1882.

The Drawing School, under the able direction of Mr. William H. Thorne, has been very successful during the past year, and the results are highly gratifying. The attendance increased to such an extent as to require the division of the students into seven classes instead of four, as hitherto. The increase is shown by this statement: The number of pupils in 1882 was 332, as compared with 229 in 1881.

The accommodations not being sufficient for all these classes on the same evening, it became necessary to divide them, accommodating a portion on two evenings and the others on two alternate evenings.

Special attention has been paid by the Director and his assistants to bringing the school under a general system, whereby the students are classified and promoted according to their progress. This plan is found to favor both the improvement of the pupil and the efficiency of the teacher.

The instruction in drawing given by the Institute is in harmony with the practice of the shops, and our students upon graduation are fully qualified to use, interpret, and execute working drawings without having anything to learn or unlearn.

The Board commends the drawing school to the Institute as deserving of hearty support.

The following report of the new Director gives the attendance in the school and shows the aims proposed. The lists of prize students are omitted.

ANNUAL REPORT OF THE DIRECTOR OF THE DRAWING SCHOOL OF THE FRANKLIN INSTITUTE, FOR THE SESSIONS 1882-1883.

That the importance of some knowledge of the Art of Drawing is becoming more appreciated every year is evidenced by the annual increase in the number of students in this school. It is a promising sign, for there is no sphere, in which the ability to express conceptions of beauty of form and design, or ideas of mechanical devices and constructions, by means of lines drawn on paper in such a manner as to accurately convey these conceptions to others, will not prove of great value. The boy who attempts to make a bird-box, will save time, vexation, and material, if he is able to plan it on paper, altering the design until it suits his fancy and arranging the details and method of construction before he commences the work. So the millionaire, who is about to have a mansion built, if he is able to understand the architect's plans, can criticise, suggest alterations, and devise conveniences, which will place the stamp of his own individuality upon it and prove a source of just pride. To one engaged in a mechanical or industrial pursuit, a knowledge of drawing is coming to be indispensable, and those who do not possess it will inevitably fall behind in the race. To quote from the recently published autobiography of the eminent Scotch engineer, James Nasmyth: "Mechanical drawing is the

alphabet of the engineer; without it the workman is merely a hand; with it he indicates the possession of a head." It is of more or less importance in all pursuits, and that this is understood is shown by the number and the vocations of the students in our school.

The number of students this year amounted to 402, of whom 210 attended the winter term and 192 the spring term. In each term, the school was divided into seven classes with an instructor for each class, and instruction was given four evenings in the week instead of two as heretofore, on account of limited accommodations.

The progress made has been very satisfactory and that some good work has been done is shown by the examples exhibited. The interest taken in theoretical drawing is encouraging, as particular attention has been given to the thorough and correct teaching of the principles of projections and intersections and what is really Descriptive Geometry, stripped of its rules and put into a practical and modern form. Many complete Working Drawings, both Mechanical and Architectural, have been made in a superior style, not after the ordinary school systems but by the methods employed in our best workshops. In the Free Hand Classes, there has been marked progress, and several of the students have made good drawings from the round. There is a great want of models, casts, and appropriate accommodations in this department.

The aim has been to make the instruction practical and useful and to have the classes so graded as to insure systematic progress. The teaching includes correct manipulation, the geometry of drawing and its application to the useful arts. The instructors have had two difficulties to contend with, one of which is an indifference to accuracy and neatness of execution on the part of some of the students, while the other is the apparent inability of other students to understand the principles involved, although taking great pride in the appearance of their work. But few appreciate the importance of both a thorough understanding of the rationale of the methods employed and also of precision and beauty of execution. * * * *

* * * The results of the year are encouraging to the instructors and should be satisfactory to the Institute and also to the pupils, but few of whom have failed to receive benefit from their attendance. The efficiency of the school has been largely due to the ability and hearty co-operation of my assistant instructors, Messrs. Carl Barth, Edw. S. Paxson, C. Claussen, Geo. S. Willets, and Wm. P. Dallett.

Next year the school will be better prepared than ever before to meet the growing demand for practical instruction in Mechanical, Architectural and Free Hand Drawing.

WM. H. THORNE,
Director.

The report of the Board of Managers brings the history of the school down to the close of 1883.

The Drawing School, which still continues under the direction of Mr. William H. Thorne, has, in point of discipline, effectiveness of instruction, and number of pupils in attendance, made gratifying progress.

The pupils in attendance at the spring term numbered 192, and those at the winter term, 184, making a total of 376. They were divided into seven classes with one instructor to each class. The school is now very efficiently organized and officered, and your Board refers to this branch of the Institute's work with satisfaction. The entire third story of the Institute building is now given up to the school, and its further growth will, therefore, be checked for want of additional class-rooms.

The subjoined report of the Director completes the account of the school to the end of the session of 1883-1884.

ANNUAL REPORT OF THE DIRECTOR OF THE DRAWING SCHOOL OF THE FRANKLIN INSTITUTE, FOR THE SESSIONS 1883-1884.

The progress of the Drawing School for the year which ends this evening, has been very satisfactory. The methods of instruction have been improved, the facilities increased, and an advance made in every particular. Much of the work done by the pupils will bear a critical examination as to the thought and study involved and as to the execution. The specimens exhibited this evening illustrate the system of instruction. Those from the Junior Mechanical Classes show a thorough course in Plane Geometry, and an introduction to the principles of Projection. This gives the student a familiarity with the names and forms of the principal lines, shapes and magnitudes, with which he has to deal, teaches him graphical methods of solving problems, impresses upon him the importance of care and accuracy, and, at the same time, initiates him into good form as regards using his implements. These classes have been in charge of Mr. George S. Willits.

The drawings from the Intermediate Mechanical Classes give an idea of the importance we place upon a thorough knowledge of Projections. A careful examination of them will show many intricate problems, which would puzzle the most expert; and, it must be admitted, that a student, who has obtained a clear understanding of them, is well prepared for any difficulties that may occur in actual work. Particular care is taken with this branch of the subject, because it is the fundamental basis of mechanical drawing, and, at the same time, is not properly understood and appreciated by draughtsmen generally. These classes have been in charge of Mr. Carl Barth.

The drawings from the Senior Mechanical Class show the application of the principles learned in the other classes to the making of working drawings of machinery. In this class, some complete machine of an interesting nature and good design is taken as a study, its use, operation and construction explained, and the class is required to make detailed drawings of it, to scale, after the manner of our best draughting offices, special attention being given to accurate measurements, the proper use and distribution of dimension lines and figures, the employment of sections and shade lines, and all the technicalities of mechanical drawing. This class has been in charge of the Director.

In the Architectural Class considerable original work has been done and some designs made which are intended for actual construction. The making of plans and elevations of buildings, and details of interior and ornamental work, are the features of this class, which has been in charge of Mr. Edward S. Paxson.

The drawings from the Free-Hand Class show marked improvement this year. This is due in great measure to the better facilities and to the additions made to the collection of casts. In this class, the student first draws from flat copies graded according to his skill, and afterwards from casts, commencing with simple geometrical figures and advancing up to the human form. This class has been in charge of Mr. Edward S. Paxson.

A list is also given of 28 students meriting honorable mention, of 12 who received the "Bartol Free Scholarships," "entitling them to free attendance during the spring term," and of 13 in Mechanical Drawing, 5 in Architectural Drawing, and 4 in Free Hand Drawing, who received certificates of having completed the full course of four terms. The names of 6 students, who are awarded Free Scholarships for the next term, beginning September 30th, 1884, are also given.

The Annual Report of the Board of Managers for the year 1884, made January 21st, 1885, contains the following statement:

DRAWING SCHOOL, 1884.

The number of pupils attending the Drawing School during the year 1884 shows a slight falling off when compared with the year 1883. which may probably be ascribed to the prevailing industrial depression. The high efficiency of the school, however, has been maintained, and improved methods of instruction and increased facilities for illustration have been introduced.

The total number of pupils in attendance during the spring term was 166, and of those at the winter term 178, making a total of 344. Some additional room has been gained for the school in the third story, by the removal of two large cases formerly devoted to the models. The Director reports that the Architectural Class is the largest we have ever had. Considering the general stagnation of all the industries, and the competition of other similar schools, which solicit, and receive aid from the public, the Board feels much gratified to report that the condition of the Drawing School of the Institute is entirely satisfactory.

In the Journal for July, 1885, the report of Mr. William H. Thorne, the Director of the Schools, is given for the sessions of 1884-1885:

ANNUAL REPORT OF THE DIRECTOR OF THE DRAWING SCHOOL OF THE FRANKLIN INSTITUTE, FOR THE SESSIONS 1884-1885.

The Drawing School year, which ends this evening, has been productive of good results, and will compare favorably with past years, except that the number of students has not been up to the average, the general stagnation of business having had its effect on this as on everything else. The system and methods of teaching have been improved, models illustrating the principles of projection have been furnished, a number of standard typical machine models have been supplied, and the collections of prints of geometrical problems, orthographic projections and machine construction, has been largely increased. * * * The importance of a knowledge of this branch of technical education is gradually becoming more appreciated and every effort should be made to encourage a study so conducive to the material development of the country, and so in harmony with the genius of the people. The system of this school combines theory and practice, so arranged as to accomplish the most useful results in the least time. * * *

The drawings exhibited this evening present a fair average of the work of the year.

The Free Hand Class shows drawings from the flat and also from casts. The Architectural Class shows designs, plans and details for dwellings, most of which are original and some for use. These classes have been under the instruction of Mr. Edward S. Paxson and Mr. Clement Remington.

The Junior Mechanical Classes show a course of problems in Plane Geometry, which gives the student, in addition to a knowledge of the problems themselves, a familiarity with the various lines, shapes and magnitudes, an appreciation of the importance of care and accuracy, and a knowledge of the use of instruments. These classes also commence the study of projections, a clear understanding of which is so essential and, at the same time, so difficult to obtain. The use of a series of models, with the objects surrounded by transparent planes, has materially aided in elucidating this subject. These classes have been in charge of Mr. George S. Willits and Mr. Willis H. Groat.

The Intermediate Classes under Mr. Carl Barth, have gone very thoroughly into

Projections, Intersections and Developments, which constitute the basis of exact drawing for mechanical purposes and are of great importance, although usually neglected. In this school much time and attention is given to this branch.

The Senior Mechanical Class under the instruction of the Director Mr. William H. Thorne, pursues a course of practical draughting, making working drawings from copies, sketches and models, applying the principles already learned, and giving particular attention to the technicalities and methods best adapted to actual work.

The names of thirty-two students, from the five classes, are given as deserving honorable mention. Six receive the B. H. Bartol scholarships; twenty-two names are given as having received certificates for four terms attendance.

The following brief report of the school appears in the next Annual Report of the Board of Managers, made January 20th, 1886.

DRAWING SCHOOL, 1885.

The Board report the condition of the Drawing School as satisfactory. The attendance at the Spring term, 1885, was..... 143
Fall term, 1885, was 190

Whole number 333

The pupils, on finishing their course of instruction, are generally competent to engage as draughtsmen.

The June number of the Journal of the Franklin Institute for 1886 gives the following notice of the school, the initial "W" doubtless standing for the name of the Secretary of the Institute, Mr. Wm. H. Wahl:

THE DRAWING SCHOOL

The usual closing exercises of the Drawing School were held in the Lecture room, on Thursday evening, May 13, 1886. The President, Col. Charles H. Banes, occupied the Chair. Addresses were made by the President, the Director and Prof. MacAlister, Superintendent of Public Schools. Numerous drawings of the pupils were on exhibition, and at the close of the addresses, diplomas were granted to students who had completed the full course of instruction. The following report of the Director, Mr. Wm. H. Thorne, was read, showing the operations of the School during the past year.—(W.)

ANNUAL REPORT OF THE DIRECTOR OF THE DRAWING SCHOOL OF THE FRANKLIN INSTITUTE FOR THE SESSIONS 1885-1886.

Notwithstanding the continued depression in manufacturing, this has been an eminently successful season of the Drawing School, in number of pupils, completeness of organization and efficiency of instruction. The number of pupils has been exceeded but once in the history of the school, and that was during 1882-3, a period of exceptional activity. The most encouraging feature of the season just passed has been the large attendance during the Spring Term, which was ninety-three per cent. of that during the Winter Term. The system of instruction in Mechanical Drawing has been further improved, and, for correctness and thoroughness, is believed to be unexcelled. This department is under the immediate charge of the Director, Mr. William H. Thorne, and consists of Junior Classes, under Mr. Willis

H. Groat, for the study of Geometrical Problems and Elementary Projections; Intermediate Classes, under Mr. Carl Barth, for the study of Projections, Intersections and Developments; and a Senior Class, under the Director, for Technical Drawing. The Architectural and Free-Hand Classes, under Mr. Clement Remington, have made rapid progress and have done excellent work in making Plans, Elevations and Details of modern cottages in the same manner as in Architects' Offices, and in copying from the flat in pencil and crayon, and in drawing in crayon and painting in oil from casts. These classes have been larger and more interested than ever before.

The students of the school are to be congratulated on the opportunity which has been given them, at a nominal cost, for obtaining a good foundation in the principles and practice of constructive and artistic drawing, and, as a rule, they have taken proper advantage of it.

The names of thirty-three students in the five classes are given as meriting "honorable mention." Six receive the Bartol Scholarships and fifteen certificates for attendance for four terms.

Continued efforts will be made to maintain and improve the high standard of the school, and to add to the usefulness and importance of this department of the Franklin Institute.

W. H. THORNE, *Director*.

The Report of the Board of Managers for 1886 thus notices the Drawing School:

DRAWING SCHOOL, 1886.

The Board refers with satisfaction to the continued efficient management of the Drawing School. The number of pupils in attendance was well up to the average of former years.

The attendance at Spring Term, 1886, was.....	175
The attendance at Fall Term, 1886, was.....	197

Whole number for the year.....	372
An increase over the previous year, of.....	39

The Journal of June, 1887, gives the report of the Director, here quoted in full except the list of names of pupils receiving "honorable mention," etc. There were 28 of the first, 6 scholarships, and 18 who received certificates for attendance.

ANNUAL REPORT OF THE DIRECTOR OF THE DRAWING SCHOOL OF THE FRANKLIN INSTITUTE, FOR THE SESSIONS 1886-87.

The increased attendance during the year, and the earnest purpose shown by most of the students, are gratifying signs of a public appreciation of the importance of a knowledge of drawing, and also of the efficiency and standing of this school. Machinists, pattern-makers and skilled men connected with engineering trades, are alive to the fact that a thorough knowledge of constructive drawing is essential to their success; but carpenters, masons, plumbers and those connected with the building trades, seem content, as a rule, to blunder along in their rule-of-thumb fashion, cutting, trying, altering and patching, until finally an approximation to a design has to be accepted from sheer necessity. It is to be hoped that the facilities offered to the rising generation to obtain a knowledge of exact methods of laying out work beforehand, will soon have its effect in improving this state of affairs.

Continued effort should be made to educate every one connected with the various constructive trades up to a realization of the importance of training the imagination and reasoning power, in order to acquire the ability to provide for the harmonious arrangement of all the details of construction, so as to avoid the absurd blunders which are continually occurring and to secure united effort, where one set of mechanics will not disfigure work already done, nor interfere with work to be subsequently done. Let any intelligent person watch carefully the building of a house, for instance, and it will be safe to predict that his admiration of the intelligence of our skilled mechanics will not be greatly exalted. Walls are built up solid and then holes are knocked in them for drain pipes, gas pipes, water pipes, cold-air flues, etc.; joists are laid and then cut to allow passage of hot-air pipes, gas and water pipes are laid without any regard to their interference with other details, or to facility of reaching them for repairs, and, if the outlets are located within a foot of their designated places, it is cause for great rejoicing; and if some are not occasionally covered up by the plasterer and lost, it is because there is a watchful eye around; soil and ventilating pipes are run through the roof after it is slated; closets and niches carefully designed, of specific sizes for special purposes, vary sufficiently to ruin the intention, and so on, *ad infinitum*. This condition of affairs is probably responsible for the superficial character and lack of proper detail and definite dimensions in the working drawings of many of our architects who have, doubtless, been so completely disheartened by their experience of the manner in which the constructive features of their plans have been carried out, that they have finally adopted the system of merely suggesting, in a general way, by means of their drawings, and trusting to providence and the builder for the result. The only remedy for all this is the better education of our skilled mechanics, and a very important part of this education should be constructive drawing; for, setting aside the utility of the art itself, its study tends to develop the very qualities that are now lacking, and to prove the ease and accuracy with which the unity of a design and the proper arrangements of all its details can be fully laid down beforehand.

As regards the decorative and artistic branches of drawing, little need be said, as interest in them has been fully awakened, and the good effect of the fostering care which they have received, is shown in the marked improvement in design, displayed of late, in furniture, wall paper, carpets, china, and all our material surroundings. Manufacturers have found that ugly, ungraceful objects will not attract purchasers except at low prices, while artistic effect and handsome decoration command their own reward.

This school has received several improvements this season, the most important of which has been the introduction of incandescent electric lights in the class rooms, adding much to their comfort and healthfulness, and permitting the use of color correctly. As a consequence, some good work has been done in oil painting from still-life, in addition to the studies from casts, in black and white, to which, being an evening school, it has been necessarily confined heretofore. The classes in mechanical or constructive drawing have well maintained their high standard, and the architectural class is becoming a very important feature. The general system and methods are being steadily improved, and the efficiency of the school increased. Eight separate classes have been taught throughout the season. * * *

In conclusion, it may be stated that no pains will be spared to promote the continued improvement of the Franklin Institute Drawing School.

WILLIAM H. THORNE, *Director*.

The February, 1888, number of the Journal gives the Annual Report of the "Board" for the year 1887, made at the meeting of January

18th, 1888. The following paragraph giving the statistics of the school shows increasing vitality and success:

DRAWING SCHOOL, 1887.

The Drawing School has shown considerable increase over the attendance of the previous year, and its efficient management, together with the marked interest of the students in their work, gives the assurance that this valuable adjunct to the Institute will continue to be successful.

The attendance for the Spring Term, 1887, was,.....	192
And for the Fall Term,.....	224
	<hr/> 416

Making an increase over the previous year of..... 44

The following is the report by the Director for 1887-1888. The list of the names of pupils receiving special distinction is here omitted. There were 36 entitled to "Honorable Mention," 7 awarded scholarships from the "B. H. Bartol Fund," and 25 "certificates for attendance during the full course of four terms."

ANNUAL REPORT OF THE DIRECTOR OF THE DRAWING SCHOOL OF THE FRANKLIN INSTITUTE FOR THE SESSIONS 1887-1888.

That the usefulness and importance of a knowledge of drawing, is becoming acknowledged, the largely increased attendance at the School during the last season clearly demonstrates. It is not many years since the class-rooms were but partially filled on two evenings in the week. As the number of students began to increase, the first move was to re-arrange the desks and partition the rooms in order to increase the capacity. Soon the limit of this was reached and an extra class had to be started on two other evenings. Gradually class after class was added until the extra classes equalled the original ones, and if the increase continues it will soon become a serious question what to do to meet it.

It is to be hoped that means will be devised by which the Institute may soon erect a building suitable for its requirements, and that this School will then be allotted quarters and facilities commensurate with the work which it is doing.

As regards the system of instruction, I propose to make some modifications next year, which have been suggested by experience. The course in the Senior and Intermediate Classes has always been efficient, but that in the Junior Classes has consisted largely of old geometrical problems, many of which are based on methods which are not used in practice. Although this has been a good training in the use of instruments and in accuracy of work, yet it has had very little effect in inculcating geometrical principles and has proven tedious and uninteresting to many students. I believe that a modification of this course will economize time, lead more directly up to practical draughting and be a better preparation for the other classes.

The progress made by the students this year and the work done by them has been up to, or above, the average, and the success of the School is largely due to the thoroughness of my assistants, Messrs. Carl Barth, Clement Remington, Willis H. Groat and John F. Rowland, Jr.

* * * * *

Although the organization and methods of the School have been continually improved in recent years, it is not proposed to stop advancing, and I trust to be able to maintain our position in the first rank.

WILLIAM H. THORNE, *Director.*

The February 1889 number of the Journal gives the Annual Report of the Board for the year 1888 made at the annual meeting January 16th 1889. The Statistics of the Drawing School are given as follows:

DRAWING SCHOOL, 1888.

The Drawing School continues under the same management, which has brought it into a condition of high efficiency; and the Board expresses its satisfaction with the character of the work done by the director and his assistants.

The attendance during the spring of 1888 was..... 203
And for the autumn term..... 179

Total attendance for the year..... 382

These figures exhibit a slight falling off as compared with those of the preceding year; but there is no question that, with increased accommodations in a new and larger building, the size and efficiency of the school can be much augmented.

The Journal of June, 1889, gives the report of the Director which follows. The list of names of pupils receiving "Honorable Mention," etc., is here omitted.

There were thirty-four entitled to Honorable Mention: six awarded scholarships from the "B. H. Bartol Fund," and thirty-two who received certificates for attendance for the full course of four terms. It will be seen that the instruction tends more and more to thoroughness in technical details.

ANNUAL REPORT OF THE DIRECTOR OF THE DRAWING SCHOOL OF THE FRANKLIN INSTITUTE, FOR THE SESSIONS 1888-1889.

The number of the pupils attending the Drawing School has been less this year than last, but as other similar schools have had the same experience, it is evidently due to outside causes and does not indicate any loss of prestige. On the contrary, the system of instruction has been greatly improved and the efficiency correspondingly increased. This is particularly the case with the Junior and Intermediate Classes in Mechanical Drawing, where all problems not directly useful have been eliminated, and the course so modelled as to be logical, concentrated, concise, and at the same time more comprehensive than ever before. Excellent opportunity is given the pupils to become thoroughly grounded in the principles, and any failure on the part of any of them to profit by it, is due either to natural incapacity or to want of appreciation of, or lack of attention to, the theoretical studies which constitute a large portion of the work. If those desirous of learning Mechanical Drawing would only commence at the beginning and go understandingly through the entire course, they would become thoroughly interested in the subject and would, at the end, be in a position to make themselves immediately useful in a draughting office or industrial establishment, and would have mastered things, which, as apprentices in such establishments, they would never get an opportunity to learn.

This is equally true of those desiring to take up Architectural Drawing. It is the ability to handle crooked, complicated and difficult problems that makes any individual architect, draughtsman or mechanic more valuable than his fellows, and although a natural gift of genius may occasionally supply the place of education and training to some extent, yet such gifts are rare, and even when they do occur, the education has to be obtained afterwards by overwork.

The Free Hand Classes have been favored this year with an unusual amount of natural talent and have consequently been very successful. Considering the total

number of hours actually spent at the work, the quantity and quality of the result attained make a gratifying showing.

Much credit is due to the ability and earnestness of the instructors: Messrs. Clement Remington, Willis H. Groat, John F. Rowland and George W. Irons.

The Report of the Board of Managers for 1889, gives the following statistics of the school.

DRAWING SCHOOL, 1889.

The Drawing School has continued in a satisfactory condition, both in regard to efficiency and number of pupils:

The attendance at the Spring term of 1889 was.....	175
And at the Winter term.	212
Total attendance for the year.	387

These figures exhibit an increase of five over those of the previous year.

The Directors' report appears in the May, 1890, number of the Journal. Of the pupils there were thirty-two who received an "Honorable Mention," six won the "Bartol" scholarships, and twenty-eight who were awarded certificates.

ANNUAL REPORT OF THE DIRECTOR OF THE DRAWING-SCHOOL OF THE FRANKLIN INSTITUTE FOR THE SESSIONS 1889-1890.

The condition of the school during the sessions, which close this evening, has been very satisfactory. The number of pupils has exceeded by thirty-seven that of the same period last year, and, owing to the re-arrangement of the class-rooms, this larger number has been as well accommodated in one body on two evenings per week as the smaller number was when divided into two sections and occupying the rooms four evenings. This concentration has added zest and vigor to pupils and instructors and has been beneficial in every way. The interest displayed by the great majority of the pupils has been very encouraging and it is a source of gratification to know of the marked improvement in the abilities and qualifications of many of them, which has been brought about by this devotion of a very limited amount of time at this night school.

The tendency of the instruction has been more towards a thorough instilling of underlying principles and correct methods than to elaborate and difficult execution, for which the time is entirely too short. The effort has been to make the most profitable use of this time, so that the result will be a correct foundation and outline, upon which the pupil can build up and fill in according to his opportunities, abilities, and energy. One result of this system is, that the drawings exhibited here this evening are largely of so technical a character as not to be generally appreciated nor understood. They are not the work of engineers, architects, and artists, made for the purpose of display, but merely that of pupils, made while obtaining principles and methods. They do not fairly represent what the pupil can do, nor adequately indicate what he has learned and the training and impulses which have been given him. I consider our time to have been much better employed than if it had been devoted to obtaining from each pupil a highly-finished drawing (the execution of which would occupy the entire term), for the purpose of making a display which would be striking and effective in a popular sense. The great majority of the pupils attend for the purpose of gaining instruction and information, which will be of use to them in their daily work and which will increase their ability to fill higher positions, and the school is conducted mainly with a view to the accomplishment of this purpose.

The corps of instructors during the last year has included Messrs. Clement Remington, Percy Ash, Geo. W. Irons, Willis H. Groat, William Paterson, George S. Cullen, John Rowland and Lucien E. Picolet, and the excellence of the school has been largely due to their abilities and zeal.

* * * * *

The next term of the school will begin September 23, 1890, with the same organization and system, and every effort will be made to increase the usefulness and efficiency of this department of the Institute.

WILLIAM H. THORNE, *Director*.

The annual ceremonies attending the presentation of certificates to the members of the graduating Drawing Class were held in the hall of the Franklin Institute. on Thursday, April 24th, at 8 p. m., Vice President Mr. Chas. Bullock presiding. Of the officers and ex-officers of the Institute were present: the Secretary, Dr. Wahl, Prof. Coleman Sellers, Prof. E. J. Houston, Prof. Persifer Frazer, Dr. Isaac Norris and Mr. Washington Jones.

Addresses to the students were made by Prof. Sellers, Mr. Thos. Shaw, Prof. Frazer, and Prof. Houston; and a very large and creditable display of the drawings made by the pupils was exhibited on the walls. At the conclusion of the addresses, the certificates, duly sealed and signed, were delivered by Prof. Thorne to those entitled to them.

The statistics of attendance on the Drawing School as given in the Annual Report of the Board of Managers for 1890, show a large increase which, as it will be seen by the report of the Director which follows, is to be attributed to improved methods of teaching. The return to individual teaching in place of class instruction is worthy of note.

DRAWING SCHOOL.

The number of pupils in the drawing school was the largest in its history, and the board expresses its entire satisfaction with its condition.

The figures representing the attendance of pupils are as follows:

At the spring term of 1890.....	178
At the winter term.....	295
Total attendance of the year.....	473

being an increase of 86 over the number for the year 1889.

The Director's report which here follows is given in the number of the Journal for May, 1891. The lists of pupils' names are here omitted, there are forty-six entitled to "Honorable Mention;" ten who won the "Bartol" scholarship; and thirty-one who received "certificates." This latest account of the school gives gratifying evidence of its usefulness as shown by its present prosperity and prospective increase.

ANNUAL REPORT OF THE DIRECTOR OF THE DRAWING SCHOOL OF THE FRANKLIN INSTITUTE FOR THE SESSIONS 1890-'91.

The year which closes this evening has been the most successful one in the history of the school, both in the number of pupils and in the system pursued in the teaching. In the department of mechanical drawing particularly the course is so well graded and so complete, without containing anything useless or merely time-consuming, that the results have in many cases been surprising. All theories have

been made to conform to the best known practice, and the two have been carried along in harmony. This has been possible because the instructors have not merely received the conventional school-training in drawing but have all had practical experience.

The use of the new text books has been of very great service in ensuring systematic methods, and in economizing the time of both pupils and instructors. This has shown so plainly in the mechanical classes that an effort will be made to have one ready for the architectural class before the next term begins.

Architectural drawing, in many respects, is not in so advanced a condition as engineering drawing, because the methods of architects have been selected and adapted to suit the average contractor in the building trades, whose estimates on the cost of work are apt to be increased, as experience has shown, by the perfection of the drawings and the degree of their exactness. This may eventually be overcome when the trades schools, which are being established, have had time to produce their effect.

The free-hand department maintains its high standard, and its product is of a character to be understood and appreciated by the laity, and to speak for itself. Special attention has been paid to pen-and-ink work with very gratifying success.

The instruction throughout the school has been individual, class instruction with black-board demonstrations having proved a failure, owing to the great difference in the qualifications of the pupils. When each individual is treated on his own merits, he can be strengthened where he is weak and is not held back where he is strong.

The re-arrangement of the class-rooms, which was effected at the beginning of the preceding year, for the purpose of accommodating the entire school on two evenings each week, has again been insufficient this year, and the school has had to be divided into two sets on different evenings. As is the case with all the other departments of the Institute, the drawing school is cramped for want of room and accommodations.

The success of the school is largely due to the ability of the instructors, Messrs. Clement Remington, George W. Irons, George S. Cullen, John F. Rowland, Lucien E. Picolet and H. Allen Higgins.

* * * * *

The next term of the school will begin September 22, 1891, and everything possible will be done to increase the efficiency and high standing of this department of the Franklin Institute.

WILLIAM H. THORNE, *Director*.

THE SPRING GARDEN INSTITUTE, PHILADELPHIA, PA.

This admirable institution, which owns and occupies a large and commodious brick building, three stories in height, with an available basement, on the northeast corner of Broad and Spring Garden Streets, resembles the well-known Cooper Union of New York City in many of its features, only, instead of being the outcome of one man's benevolence, it is the result of combined effort. While, like Cooper Union, it offers to the public free use of its library and reading rooms—open from 10 A. M. to 10 P. M.—it differs from that institution in affording at present no absolutely free instruction, though the tuition fees for attendance upon all its night classes are very much less than those of the day classes; other differences are the absence of any elementary instruction corresponding to that given to the night science classes in Cooper Union; and in its tech-

nical schools the absence of instruction in telegraphy—and in wood engraving.

HISTORICAL STATEMENTS.

“The Spring Garden Institute,” “in the County of Philadelphia,” was incorporated by act of the Legislature of Pennsylvania, approved by the Governor, April 12th, 1851.

The following is the list of original incorporators, as given in the Act of 1851:

SEC. 3. The Officers and Managers of “The Spring Garden Institute,” now acting, viz: John M. Ogden, President; John Bouvier, Vice-President; Philip M. Price, Treasurer; John W. Dixon, Secretary; and William B. Thomas, Adam Diller, Henry Budd, John G. Moore, Alve E. Laing, S. Harvey Thomas, Hiram Ayres, William R. Stockton, Wilson Jewell, William P. Jenks, William H. Schreiner, Isaac C. Price, William Curry, Joseph Plankington, John Simmons, James D. Wetham, Henry F. Leib, James Steele, William Vanderveer, William Nicholson, James R. Garrigues, John Baird, John B. Green, and Hiram Miller, shall be the Board of Managers of the Institute, hereby incorporated, until the stated annual meeting of the Institute, as provided in the fourth article of the Constitution.

This Institute during the forty years of its existence, as will be readily seen in the extracts which follow from the series of Annual Reports, strikingly illustrates the changing features of development common to kindred undertakings in other cities and largely due to the varying phases of educational progress in the community.

Beginning in the days when Lyceums for public lectures, public free libraries, and young men’s Debating Societies were the recognized methods in vogue for popularizing science, disseminating universal knowledge, and thus “promoting the moral and intellectual improvement of young persons”—its announced purpose, these features were made prominent in its first years. At the first, however, it had one distinguishing added feature in the schools of design, or elementary drawing schools for young mechanics, which were opened at once, and which continued for some years and then were discontinued and apparently clean forgotten for a long interval.

It is evident that the prosperity of the Institute was very much impaired during the years from 1860 to 1865—whether this was because lectures and debating societies were then out of vogue, while the Library and Reading room were not kept supplied with current publications of interest; or, by reason of the greater excitements arising from the life and death struggle for its own preservation in which the nation was then engaged, does not clearly appear.

A night school for teaching the common branches of English to the boys who attended no other school was, after a few years, opened in the basement of the building. Notice of a donation to this school appears in the report of 1870, the first trace of it in such reports as are accessible to the present writer. This school was continued till the renewal of life, and change of methods adopted by the Institute

in 1878, when it was closed because it was no longer needed; the city having opened free night schools.

In 1878 a great step was taken in advance, and the Institute boldly entered on a new departure. Night-Drawing School classes, and, also, in 1879-'80, a Night School of "Mechanical Handiwork," were opened. The Library was largely increased by gifts. A fully organized well equipped Day Manual Training School was soon established.

In 1890, owing to the opening by the City of a public Manual Training School, and to the fact that similar instruction was given in Girard College and in other schools, "and that the University of Pennsylvania was about to establish workshops of its own," while "the soldiers' orphans" were to be withdrawn from the city during the coming year, the Day Mechanical classes were discontinued. They had well served the purpose of introducing in Philadelphia, a high grade of Manual Training Schools. The very completeness of their success in rendering this service to the community was shown by the fact that they were no longer needed.

THE CONSTITUTION.

The Constitution is usually printed in the Annual Reports; the copy here quoted: "as amended and approved by the Court in 1881," together with the act of incorporation and by-laws, is from the thirty-first Annual Report, for 1881-1882.

Article I. of the Constitution thus states the name and purpose of the new association :

The name of this association shall be the "Spring Garden Institute;" its primary object the promotion of the moral and intellectual improvement of young persons.

Article II. treats of membership and consists of eight sections. Any person over fifteen years of age if approved by the Board of management may purchase stock and become a stockholder in the Institute.

The provisions as to "stock" resemble those of the Franklin Institute. A single share of stock represents a payment of \$10 to the treasurer, and is subject to an annual tax of \$2. Payment of \$50 makes one a stockholder *in perpetuo*, free of annual payments. This stock is transferable under certain conditions. Thirty dollars makes one a stockholder for life, also free of annual payments, but not transferable. In addition, the constitution and an agreement "to conform to all rules and regulations lawfully enacted by the Institute" must be signed. The common "stock" is transferable under certain conditions. Each life member and stockholder is entitled to two tickets to the Library, one for personal use, the other transferable; these must be renewed annually.

“ARTICLE III.—*Officers.*

The Officers shall be, a President, Vice-President, Treasurer, Secretary, and twenty-four Managers, who, together, shall constitute a Board for the transaction of business, and shall report annually their proceedings to the Institute.

* The Managers to be elected in April, 1882, at their meeting for organization, shall be divided by lot into three classes of eight each. The first class shall hold office for the term of three years, the second class for the term of two years, and the third class for the term of one year from the second Thursday of April, 1882, and thereafter at each annual election, eight managers shall be chosen for the term of three years, to fill the places of those whose terms have expired.

ARTICLE IV.—*Meetings.*

* The Institute shall hold a stated meeting on the second Thursday in April, in each and every year, when the annual report of the Board of Managers shall be read, and the Officers for the ensuing year, and eight managers for three years, shall be elected by ballot; but no members whose subscriptions are unpaid shall be entitled to a vote, or be eligible as officers or managers of the Institute. Special meetings shall be called by the President or Vice-President, whenever requested by fifteen of the members, of which meetings at least three days' public notice shall be given, in one or more newspapers published in the City or County of Philadelphia, and by posting in the Library.

Articles v., vi., and vii. severally define the duties of the President, Treasurer, and Secretary.

ARTICLE VIII.—*Managers.*

The Board of Officers and Managers, seven of whom shall constitute a quorum, shall hold stated meetings monthly; shall make their own By-laws, supply vacancies in their body, keep regular minutes of their proceedings, which shall be open at all times to the inspection of the members of the Institute; shall establish a Library and Free Reading Room; appoint a Librarian, purchase and receive such books, periodicals, and papers for the Library as they may think proper; provide for suitable lectures, and have power to devise and execute all measures, which in their judgment, will advance the interests of the Institution, and carry out efficiently the objects of its organization, not inconsistent with this Constitution. They shall also hold their offices until their successors shall have been elected.

ARTICLE IX.—*Library.*

The books, periodicals, and papers belonging to the Library and Reading-Room may be loaned at the discretion of the Managers to the members of the Institute, and to such young persons as shall furnish satisfactory security for the payment of fines in default of punctual return of the volumes, and for any loss or injury that may be sustained in the book or books loaned. The Reading-Room shall be kept open at such times, and under such regulations as the Managers may designate, for the free use of young persons, and the members of the Institute.”

Article x, the final article of the Constitution, provides for the alteration or amendment of that instrument by a two thirds vote of the members present at an annual or special meeting; notice of which, with proposed changes, must be posted in the Reading Room one month previously.

* Amendments, approved by the Court of Common Pleas, June —, 1881.

THE BY-LAWS.

The nine sections of Article I of the By-Laws relate to the Board of Management, the eligibility of members of the Board, the methods of election, order of meetings, etc. The Managers have general supervision and control over all the affairs and property of the Institute. They must make an annual report on all matters to the stockholders, and issue a printed list of all names of stockholders and subscribers, appended to the annual report.

ARTICLE II.—*Subscribers.*

Annual subscribers (adults) shall pay three dollars per annum; Junior subscribers (minors) shall pay two dollars per annum. Annual and Junior subscribers shall have the use of the Library, and the right to attend either night class of the drawing schools one session per week during the term.

ARTICLE III.—*Free use of Library.*

Minors over twelve years of age, desiring the use of the Library or Reading Room as referred to in Article IX of the Constitution, shall make application to the Library Committee, a majority of whom shall be necessary to grant such privilege, which in no case shall continue for more than one year without renewal, and shall be forfeited for disorderly behavior, or non-compliance with the rules of the Library."

* * * * *

ARTICLE VII.

SEC. I. At the first meeting subsequent to the election of Officers and Managers, the following Standing Committees shall be appointed :

On Library and Reading Room, to consist of 7 members.

On Property, to consist of 5 members.

On Accounts, to consist of 3 members.

On Finance, to consist of 5 members.

On Lectures, to consist of 5 members.

On Schools of Design and Drawing, to consist of 7 members.

On Minerals, etc., to consist of 3 members.

On Museum, to consist of 5 members.

On Schools of Mechanical Handiwork, to consist of 7 members.

On Law, to consist of 3 members.

SEC. 2. The Committee on Library and Reading Room shall report monthly to the Board a list of all books, periodicals, papers, furniture and apparatus, with the probable cost of each, which in their judgment may be requisite for the use of the Institute, and purchase such as may be authorized by the Board. They shall see that the Librarian performs his or her duties, and report rules and regulations for the government of the Library and Reading Room for the approval of the Board.

* * * * *

SEC. 6. The Committee on Lectures shall make provision for such lectures, exhibitions and literary entertainments, as they may deem expedient.

SEC. 7. The Committee on Schools of Design, Drawing and Night School shall make arrangements for opening and continuing these during the proper season, in the building and under the auspices of the Institute, and shall, by all proper means, encourage and promote this important feature of its objects and purposes.

SEC. 8. The Committee on Schools of Mechanical Handiwork shall organize and

maintain such schools under regulations as to fees, term, pay of teachers, etc., approved by the Board.

SEC. 9. The Committee on Museum shall have charge of such property of the Institute as may not come under the care of other Committees of the Board, and shall arrange for the exhibition of the same.

The following sensible provision, embodied in the final section of Article VII, shows a purpose to confine the members of the Board strictly to the discussion of the business before them.

SEC. 14. No member of the Board shall speak more than twice, nor more than ten minutes at one time, on any question of business, without permission of the Board.

Article VIII, the final one of the By Laws, provides for altering, amending, or suspending the By Laws.

In the prospectus of its schools for 1881-1882, they are classed as "The Drawing Schools," and "The Technical Schools"—the latter being Manual Training Schools.

So far as can be inferred from the predominating tendency of the Institute, its purpose was very similar to that of the Franklin Institute, and its special work was to advance the education of young mechanics.

While only its night classes in drawing and mechanical handiwork are included with these here grouped, the other departments of the Institute being treated elsewhere, the general and historical account of the Institute is here given.

The Institute invites membership of two kinds—that of young men and boys who can be benefited by attendance at the schools, the reading room and the free lectures, and that of people of means, who, while they may not need such advantages for self-improvement as the Institute offers, can help others to these advantages by their contributions.

The terms of membership are as follows :

Members in perpetuo (with right of succession) pay \$50 ; life members pay \$30.

Stockholders pay \$10 per share of stock, and \$2 annual tax thereon.

Annual subscribers pay \$3 per annum ; junior subscribers pay \$2 per annum.

This Institute had its origin, as will appear in the following extracts from the First Annual Report made by the managers, in a movement undertaken in 1850 by the citizens of Philadelphia, to found a Young Mans Institute; and to promote the founding in the several districts of the City, of similar associations.

The citizens residing in the Spring Garden District were the first to avail themselves of this proffered aid and to organize for that purpose. As soon as this was done, Richard Wistar, Esq., gave to the new organization the building lot on the northeast corner of Broad and Spring Garden Street, valued at \$5,000, upon which, as enlarged by an additional lot secured by the Institute, the building was erected.

The *first annual report made by the managers thus recites the origin and purpose of the new organization :

In presenting this Report of the proceedings of the Managers, during the period they have administered the affairs of the Institute, it is deemed proper to state in connexion therewith, as showing the basis of the movement; that a number of public spirited citizens of the City and County of Philadelphia, impressed with the belief derived from observation, that many of the evils which exist in, and afflict the community, originate to a great extent, among those whom circumstances had deprived of the advantages of the moral training and mental culture offered by the public schools; and were also convinced that the establishment of institutions, having for their object the moral and intellectual improvement of young persons and others, by means of free reading rooms, circulating libraries, the delivery of literary, scientific, and practical lectures, and drawing schools, schools of designs, &c., where their hours of leisure may be comfortably and profitably employed, will do much towards correcting those evils. Under this impression, and in view of this conviction, they projected and organized a Young Mans Institute, early in the year 1850, and as an encouragement for the citizens of the city and the several districts of the county, to commence the establishment of such institutions therein, they raised, by voluntary subscriptions, a fund of upwards of \$30,000, a proper portion of which they proposed to pay over to a duly organized body of citizens in the city or any of the districts, (subject to the conditions and stipulations herein before set forth,) who shall secure a lot suitable for a building, to contain a reading room, library, lecture room, &c., and, in addition thereto, raise by subscription a sufficient sum to erect such building, and to carry out the general purposes and objects designed.

The Managers also take occasion to congratulate the subscribers to the Institute, and the citizens of the District generally, upon the fact, that in this District the first successful movement was made to commence and carry forward an enterprise such as was contemplated by the Young Mans Institute, and have availed themselves of the inducement held out as an encouragement for the undertaking. And while they feel much gratified in having it in their power thus to congratulate the citizens upon this subject, they would call their attention to the importance of this enterprise in reference to its effect for good upon the community in general, as well upon the present, as upon future generations. To cultivate the intellect, create and diffuse a high moral tone of sentiment and rule of action among the people, are duties that commend themselves powerfully to every good citizen and well-wisher to his species, and the welfare of the community. The Managers, therefore, express an earnest hope, that the liberal spirit and philanthropic sympathy which have, so far, manifested themselves in those who have voluntarily aided by their subscriptions to this undertaking, will move all those of our citizens, whose means will permit, to do the same, so that it may be carried, at an early day, into successful operation; its usefulness made apparent by good results; and that hereafter it may be referred to, as a Monument of the munificence and public spirit of the people, and the pride and ornament of the District.

The arrangements with the Young Mans Institute, and the ceremonies accompanying the laying the corner stone of the building are also stated.

* First Annual Report of the Board of Managers of the Spring Garden Institute. Read at the annual meeting of the members, January 8, 1852, and ordered to be printed, together with the Treasurer's account current, also the prayer made by Bishop Potter, and the address delivered by Gov. Wm. F. Johnston, on the occasion of laying the corner stone for their building, July 8th, 1851. With the names of the Officers and Members of the Board of Managers for the year 1852. Philadelphia: John Richards, printer, 299 Market Street. 1852. Pp. 24.

The committee to confer with the Trustees of "The Young Mans Institute," in reference to the proportion of a Fund raised and held by them, intended for the District of Spring Garden, having completed some preliminary arrangements, reported the terms upon which they proposed to pay the same over to this Institute. The Board having formally consented to these terms, a written agreement was executed between the parties, and the money (being \$5,000) was paid to the Treasurer.

TERMS OF AGREEMENT BETWEEN THE YOUNG MANS INSTITUTE AND THE SPRING GARDEN INSTITUTE.

The conditions and stipulations in the said agreement are as follows, to wit:—

"The said sum of money shall be expended by the said 'The Spring Garden Institute,' towards the erection of a suitable building on their lot of ground, at the north-east corner of Spring Garden street and Broad street, for a Library, Lecture Room, and other uses, for the purpose of carrying out the objects of the two Institutes, as expressed in their respective charters, or for furnishing the same with suitable books and apparatus. The building, so to be erected, shall never be used by the said 'The Spring Garden Institute,' for any political or religious meetings, nor for any immoral purposes whatsoever; but the whole building, or the income to be derived from the rental of portions thereof, shall be appropriated to the primary objects set forth in the Constitution of the said 'The Spring Garden Institute.' The books and papers of the said, 'The Spring Garden Institute,' shall be at all times subject to the inspection of a committee of the Trustees of the said, 'The Young Mans Institute,' and no books shall be allowed to remain in the Library, or lectures be permitted to be delivered in the Lecture Room, which may be objected to by the said Trustees, to whom annual reports of the operations and conditions of the said, 'The Spring Garden Institute,' shall be made by its Board of Managers. If, at any time hereafter, the conditions of this agreement shall be violated by the said, 'The Spring Garden Institute,' the Trustees of the said, 'The Young Mans Institute,' shall give them written notice, specifying such violation, and if at the end of one month after such notice, satisfactory explanation shall not have been given, or such violation have been discontinued, then the said Trustees of the said, 'The Young Mans Institute,' may give notice to the said, 'The Spring Garden Institute,' that the said sum of five thousand dollars must be refunded to the said, 'The Young Mans Institute,' within six months from the date of such notice; and at the expiration of the said term of six months, but not otherwise, the said sum of five thousand dollars shall become due to the said, 'The Young Mans Institute,' without any fraud or further delay."

The Commissioners of the District of Spring Garden, upon application for aid in the undertaking, appreciating the importance of the objects and purposes of the Institute, and the influence for good it was likely to have upon the community in general, with a commendable spirit and creditable liberality, passed a resolution, placing at the disposal of the Institute the sum of three thousand dollars, in certificates of loan, which have been received by the Treasurer.

CEREMONIES ON LAYING THE CORNER STONE OF THE INSTITUTE BUILDING.

Plans for a building were then invited, and a selection made. A building committee were appointed, a corner stone prepared, and arrangements made for laying it with the usual formalities. This was done in the afternoon of the eighth day of July, and sundry documents deposited therein, containing an account of the origin and history of the Institute up to that period, the names of the principal officers of the United States and the State Governments, the names of the Commissioners and Officers of the Corporation of Spring Garden, and the Managers of the Institute;

newspapers of the day, pieces of coin, &c. The ceremonies took place in the presence of a large number of citizens, and were as follows :

Prayer by the Rt. Rev. Bishop Potter, D. D., at the conclusion of which His Excellency, William F. Johnston, *Governor of the Commonwealth*, laid the stone, and delivered an eloquent and impressive address. Appropriate and highly interesting addresses were also delivered by the Hon. Wm. D. Kelley, Hon. Henry D. Moore, and Hon. Charles Brown.

Governor Johnston, in the opening sentences of his discourse, quoted this pregnant sentence from the Farewell address of Washington—"Promote, as an object of primary importance, institutions for the diffusion of Knowledge. In proportion as the structure of a government gives force to public opinion, it should be enlightened."

From this interesting address by the Governor, the following suggestions as to the character of the library are taken :

Allow me to direct your attention to one matter. It is the selection of your books. I confess my inability to do more than simply impress upon your minds how greatly and how controllingly important to the welfare and success of your institution a judicious selection of books may prove. Too much caution cannot be exercised on this subject. Persons of undoubted learning, and good taste, and pure morals, should be alone entrusted with this duty. Your intelligence will prevent the choice of vicious or unlettered men for this task. This is not enough—do not entrust the task alone to individuals merely on account of their wealth, respectability or influence. They often, with the best intentions, will make bad selections. Associate with this last named class the highest intellect within your reach, and permit no trifling expense or frivolous excuse to prevent them from a faithful execution of their trust. The best translations of the Greek and Roman classics should of course adorn your library, as well as the best translations of the intellectual and profound writers of Italy, Germany, Spain and France. The best editions of all the old English writers, Chaucer, Shakespeare, Spenser, Jonson and Milton, should be found on your shelves. There too should be the writers of her Augustan age. In morality, philosophy, politics, and poetry, from the time of "the day star" of English literature, Geoffrey Chaucer, to the times of Scott and Byron, of Moore and Campbell, of Smith, Wilson, Jeffrey, Coleridge and Macauley. The works of native minds demand a prominent place in your front shelves. Irving, Prescott, Bancroft, Sparks, Longfellow, Bryant, and all who have adorned the pages of American literature. Let merit guide in this selection, without partiality or prejudice—the feast, be it remembered, is prepared for another age, when the trashy common places of the day shall have sunk into deserved oblivion.

In legal learning your own city furnishes a brilliant array of eminent writers—Tilghman, Dallas, Binney, Rawle, Sergeant, Sharswood, and others.

Place no abridgements in your library, no books of choice extracts, no expurgated editions of good works. These form the emasculated literature of the small and contracted soul. Let your young men have a vigorous and substantial literature, and let them have this in all its fair proportions, and as it came from the workman's mind. Beware of a bibliomania, a rage for a multitude of books. It is better to possess a few works well selected, and have these few *well* read, and *well* digested, than large libraries of indifferent works and *careless* readers. * * *

After a few words of warning against giving too much time to ephemeral reading such as newspapers and magazines he says:

I do not wish to be understood as advising the rejection of this kind of reading, but merely as asking for it a secondary place in your selections. Information

gleaned from these sources must be necessarily less durable and Catholic, and more superficial and evanescent than the teachings of books of approved and acknowledged authority. The book reader is familiar with the workings and thoughts of all ages; the readers of magazines and newspapers are conversant with the history of their own times, which not unfrequently is found to be as cumbersome and untruthful a volume as a "History of his own Times" has proved in English literature. Political treatises should be so selected and read as to cultivate the patriotic thoughts of the earlier sages and writers of our country. Washington, Jefferson, Hamilton, Adams, Franklin, Marshall, and others, furnish in their writings monuments of human wisdom and politic truth, which are neither worn by time nor broken by the storms of faction.

Party, and party papers will always exist in free governments; and while I would not exclude from your rooms the well conducted partisan newspaper, I would advise that it be made less prominent than is too frequently the case. Young persons are apt to yield too much devotion to the exciting topics of the day, and thereby generate passions that are incompatible with that serious and grave mood and habit of mind which is best adapted to the acquisition of stores of sound learning. As this building is especially intended for the education of youth, let it never be turned into a political arena by the introduction of too much party spirit. In olden times the Muses of Science and History and Song shunned the angry strife of the world, and sought in cool haunts, on mountains, in forests and by fountains, places propitious for contemplation.

It is proposed to have lectures delivered on the physical sciences; on Astronomy, Geology, Chemistry and Mechanics; and kindred subjects.

Lectures are useful, and more particularly so when accompanied by proper experiments and illustrations; for, through the eye, ideas are more readily and firmly fastened upon the mind. The physical sciences are the most sublime, as well as the most useful of human studies. They expand the intellect, purify the heart, teach man his real value in creation, and give just conceptions of nature and of nature's God.

It will be seen that to form a library and to provide courses of lectures, were the main purposes of this Institute in the Governor's mind.

In the Second Annual Report, January 13th, 1853, the Managers announce the completion of the building, give a brief account of the dedicatory exercises, and report the opening and active operations of the several departments.

The Building is one hundred feet front on Broad street, and fifty-seven feet front on Spring Garden street.

A Lecture Room on the second floor, one hundred by forty-seven feet; a Library Room; a Reading Room; a room for Schools of Design, &c.; and a room for the use of the Board of Managers—all appropriately furnished with the necessary fixtures, furniture and conveniences—constitute that portion of the Building designed to be occupied and used by, and for the purposes of, the Institute. There are three stores or offices on the ground floor of the Spring Garden street front, besides an entrance to the Library, Reading Room, &c.; and two on the Broad street front, exclusive of a large Hall, which constitutes the main entrance to the Lecture Room. Two of those offices are now rented. The Lecture Room has also been rented occasionally; and it is probable, that within a short period of time, a considerable revenue will be derived from these sources.

Full recognition is given to the members of the building committee and especially to their Chairman, President Ogden, for the

constant supervision of the building from the laying of the corner stone to its final completion and equipment.

By referring to the account of the building as at present arranged which follows in the extracts given from the 36th Annual Report, it will be seen how the educational needs of the Institute have developed; so that, at the cost of sacrificing the sources of income afforded by the lower story, the Managers have been forced to give the whole building to the uses of the various departments.

The building was publicly and formally dedicated to its destined objects, in the presence of a large concourse of citizens, on the twelfth day of November last. The ceremonies on that occasion were as follows:

Prayer by the Rev. Mr. Stork, which was followed by a dedicatory address by the Right Rev. Bishop Potter, D. D.

His Excellency William Bigler, the present Governor of the Commonwealth, responded to an invitation of a committee of the Board, and evinced his approval of the purposes and objects of the Institute, by his presence, and the delivery of an eloquent and highly interesting address, as his immediate predecessor in office (William F. Johnston) had done, on the occasion of laying the corner stone of the Edifice. Governor Bigler strongly enforced the importance of establishing such Institutions for the benefit of the young, where they may be led to contemplate the value of morality and virtue, and imbibe lessons that will fit them for the high and holy duties that await them, as citizens of our beloved country, of upholding and perpetuating the free Institutions it is our, and their happiness to enjoy. He also sketched the progress which enterprise, skill and ingenuity had made in changing the economy of our condition as a people, as well as the surprising revolutions inventions had produced in the mechanic arts, and the benefits resulting from them to mankind.

Professor Allen, President of the Girard College, Judges William D. Kelly and Joseph Allison, were also present by the invitation of the Committee of the Board—each of whom delivered appropriate addresses, illustrative of the value of a proper cultivation and application of the powers of the mind, as well in reference to practical as to social duties, and in every pursuit in life. The adaptation of such Institutions as this to the end proposed, and commending the Institute to the favor and support of all who possess the means and the public spirit to use them, for objects tending to promote individual enjoyment, and the highest and best interests of society at large.

A Librarian (Philip Price) was appointed, and is now in the discharge of the duties assigned to him.

A series of Lectures was commenced in the Lecture Room on the 22d of November, and have been continued weekly since that period, and arrangements have been made to continue them weekly during the season. These have been well attended by ladies and gentlemen, as well as a large number of young persons, who manifested much interest in them.

About 400 volumes of Miscellaneous Books have been purchased, which, with those presented to the Institute by sundry persons, have been registered, numbered, and entered in a catalogue, making in the whole 871 volumes, and are now upon the shelves in the cases, ready for use in the room, or to loan, under the rules and regulations adopted by the Board.

The Library and Reading Room were opened for public use on the evening of the 8th inst., being the second anniversary of a meeting of a few persons, at which the project was first suggested and the initiatory steps taken, and are open every evening, except Sundays, from 6 to 10 o'clock; and on Saturday afternoons from 2 to 5

o'clock. Since the opening, the Rooms have been visited by a large number of young persons of the District, evincing a desire to avail themselves of the advantages offered by the Institute.

Schools of Design have also been opened, in which architectural and machine drawing are taught four evenings in the week, to respectable classes of young men, which promises highly beneficial results to those in attendance, in reference to the branches of Industry to which they refer.

A portion of the ground upon which the Institute Edifice stands (sixty-four feet in front on Broad by fifty-seven feet in depth, and valued at \$5,000), was gratuitously conveyed to the Institute, by Richard Wistar, Esq., as an evidence of his approval of its objects, and his conviction of the benefits to result from its establishment; and the other portion (thirty-six feet on Broad Street by fifty-seven feet on Spring Garden Street), was purchased, at a cost of six hundred and fifty dollars, subject to an annual-ground rent of one hundred eighty dollars per annum, principal \$3,000.

There has been received by the Treasurer, since the commencement of the Institution, the following amounts:—

From the Young Men's Institute.....	\$5,000.00
From \$50 subscribers	6,647.50
From life subscribers.....	885.00
From annual subscribers and tickets to lectures sold	728.50
From donations.....	114.00
From Spring Garden loan and interest thereon.....	3,108.00
	<hr/>
	16,433.00

There has been paid out :

On orders of the Board for the corner lot	\$650.00
On orders for ground rent, printing, advertising, and incidentals generally.....	1,003.55
On order of the Building Committee.....	13,780.68
	<hr/>
	15,434.23

Leaving in the treasury 998.77

The Treasurer's account current, attested by the Committee of Accounts of the Board, hereto annexed, will show the financial operations for the year, and the present condition of the Treasury. The cost of the Building, Apparatus, Fixtures and Furniture (exclusive of the ground and books) is..... \$18,513.44
Of which there have been paid as above stated 13,780.68

Leaving a balance on the building of 4,732.76
To this add a special appropriation for the purchase of books for the library of 1,000.00

Which makes the sum of 5,732.76
To meet this, there is in the treasury, as above shown, a balance of.... \$998.77
And subscriptions already made, and yet to be collected, of about 1,800.00

Leaving a deficiency on the building and library of 3,433.99

which the Managers have reason to hope the public spirit and liberality of the people, prompted by a just sentiment of pride, and appreciation of its objects, will speedily supply; as well as the means of adding to the present stock of books in the Library from time to time, and to procure such Philosophical and other apparatus

as may be needed, to render the means of the Institute fully commensurate with the philanthropic and noble objects contemplated in its establishment.

The Managers take occasion to congratulate the subscribers and the people of the District of Spring Garden generally, on the completion of a building therein, designed for objects so important to individual welfare and public benefit. And again, upon the fact, of which they may justly feel a degree of pride, that the citizens of the District were the first to commence and carry forward to completion so noble an enterprise, in view of a movement made a few years since, designed to encourage such undertakings. They also take occasion, to tender their sincere acknowledgements to the citizens of the District and others, for the prompt and liberal manner in which they have generally responded to their applications for aid in the undertaking, *many* of whom expressed much gratification in contributing thereto, deeming it a duty and a pleasure to do so; while *all* are constrained to admit, that its objects are highly important, as tending to the most beneficial and wholesome results to society.

The establishment of Institutions such as this, intended to diffuse information among the people, refine the tastes, and elevate the moral sentiment of society, by means of Libraries, Lectures, &c., has engaged the attention, and enlisted the energies of the benefactors of mankind from the earliest ages; and of none more than the early founders of our Commonwealth. The labours of Franklin and his coadjutors established an Institution that has conferred immense benefits upon, not their own only, but upon after generations. So deeply rooted is the conviction of the advantages to be derived from them, that the intelligence, patriotism, and virtue of a people are, to a great extent, measured by the number and variety of such Institutions which exist among them, and the support and encouragement given to, and the use made of them by the people.

The Managers therefore trust that the same spirit and feeling, which have done so much in by-gone ages, and have animated those who have already aided this work, will induce those of the citizens who have not done so, and whose means will permit, to respond to the appeal they now make on behalf of the Institute; so that it may be placed upon a footing that will enable it to extend its benefits, and make its usefulness felt, in good results to the community.

By order of the Board

Attest,

JOHN M. OGDEN, *President*,

JOHN W. DIXON, *Secretary*.

The following extract from the Fourth Annual Report, January 11th, 1855, shows the successful workings of the Institute during the two years previous to that date.

"At the time the last, or third, annual report of the Board was made to the members, at a meeting thereof, held January 12, 1854, they were informed of, and congratulated upon, the fact, that the Institute was then "placed upon a firm basis, and progressing upon the philanthropic and noble mission, designed for it by its founders and contributors." With a library of about 3,000 volumes of books for use in the Reading Room, which was open every evening (except Sundays) from 6 to 10 o'clock for that purpose, or which might be taken out for home reading, by members, and such young persons as are embraced in the design or purpose of the Institute, by complying with the regulations prescribed by the Board; with its Literary, Scientific, and Historical weekly Lectures during the season usual for such means of enjoyment and instruction; and with schools of design, in which architectural and mechanical drawing were taught to large classes, established under its auspices, the present condition of the Institute is in all respects of a very encouraging character in reference to the objects and purposes of its establishment.

During the year now brought to a close, some additional alcoves or projecting cases for books, have been erected in the Library Room, and the Library increased by the purchase of 139 volumes of new and standard works, and by donations from sundry sources of 76 volumes.

The room appropriated for the exhibition of minerals, &c., has been fitted up with the required cases and furniture for that purpose, and there is now upon the shelves therein, a large collection of rare and valuable specimens of mineral productions, and other interesting curiosities. For the larger portion of these, the Institute is indebted to the liberality of Jno. Baird, Chas. S. Ogden, and Chas. B. Trezo, Esqs. Mr. Trezo has also, at the request of the Board, placed in the room one of his cases, containing many hundred specimens of a curious and very valuable character, neatly labelled and arranged for examination.

Since the first opening of the Library, 511 persons have complied with the rules and regulations of the Board, under which books are loaned out for home reading. A large proportion of these are young men, of various pursuits in life, such as the Institute was mainly intended for the benefit of; a considerable number of others also avail themselves of the privilege of reading in the room, where there are ample accommodations; while an increased attendance at the weekly lectures, manifests a growing interest in that branch of the objects and purposes of the Institute.

Another evidence of the general popularity and appreciation of the objects and purposes of the Institute is found in the fact, that the annual contributing membership has been greatly increased during the year.

The Institute is still without the necessary apparatus for lectures of a more philosophical, scientific, mechanical, and practical character, originally and still included in the objects of its establishment; but the means, after paying the cost of the erection of the building, and furnishing the same, as also the supply of books to the Library, are not at present adequate to the required expenditure. But anticipating the co-operation of the members, and the liberality of the citizens of the vicinity, it is hoped this object will soon be accomplished, and the usefulness of the Institute thereby extended."

In closing his report for this year President Ogden recites the fact that in pursuance of an Act of Assembly, the limits of the City of Philadelphia have been enlarged so as to take in those of the county and the former divisions of "Districts" no longer legally exist; but while the Institute can no longer be designated as in Spring Garden District, he reminds them that it was created for the benefit of the residents in its neighborhood and can still be enjoyed by the same community.

The Seventh Annual Report, April 8th, 1858, records the union effected between the Free Reading Room Association and the Institute, in accordance with which the Library and furniture of that association are transferred to the Library of the Institute.

In view of the financial troubles of 1857, the usual Lecture courses were abandoned.

In order to add to their income the managers had leased their lecture room for uses of an Episcopal congregation, but the Trustees to the Young Mans Institute objected that this was in violation of the original agreement between the two Institutes, which was that the building "should never be used for any political or religious purposes." A few years later, when the Institute was forced by lack

of means, to close its rooms for a time, the Young Mans Institute again demanded the return of their advance on the plea that it had abandoned its functions.

All such difficulties have happily been safely overcome; the fact, however, that such questions have arisen, is sufficient to show how important it is that every such association should be independent and individual; otherwise, so difficult is it to foresee future needs, it is exposed to needless opportunities for friction, which may easily prove disastrous.

In 1865 the managers issued a pamphlet containing the Ninth (1860) to Thirteenth (1864) Annual Reports inclusive. From these brief statements it is clear that for some causes—probably largely attributable to the disturbances incident to the War of the Rebellion, the interests and the activities of the Institute had gradually lessened till the report for the year 1864, announces that the library and reading room have been closed for some time past, not from choice but as a matter of positive necessity; the course of lectures were also abandoned; they hope, however, soon to be able to reopen. It was at this crisis that the Young Mans Institute demanded the repayment of the \$5,000, loaned to the managers when the Institute was founded, on the ground that the Spring Garden Institute “was not fulfilling the purpose of its organization.”

While the first reports call attention to the “Schools of design, in which architectural and mechanical drawing were taught to large classes, established under its auspices,” which is the reference in the Fifth Annual Report;—no reference to the drawing school is found in reports subsequent to the Sixth, April 9th, 1857, and in this, it appears only as an item of payment to the Drawing School Committee in the Treasurers account.—No reports from the 13th, till that of “the 19th, 4th month, 1870,” are accessible to the writer. From that report it is evident that in the use made of the Library and Reading Room, and in the success of the course of 14 Lectures, there is renewed activity and life in the Institute.

In this report appears the following statement which is the first notice of the existence of a Free Night School that has fallen under my notice.

A committee of three members appointed to extend some care over the night school held in the lower story of our building, have visited the same at different times, and on several occasions have addressed the pupils.”

The number enrolled during the winter was sixty-five, all of whom were engaged during the day in earning a livelihood. Believing that no worthier object could be presented to us than that of instructing those whom poverty prevents from attending day schools; besides providing such books and stationery as were needed, an appropriation of \$100 was made towards the expenses of this effort.

The succeeding reports down to and including the Twenty-Sixth Annual Report, 1877,—make mention of this free night school and

include reports by the committee in charge. There were from 100 to 200 boys enrolled and an average attendance of some 30. The school was open four months in the year.

The Twenty-Seventh Annual Report, 1878, contains the following introductory paper which, as it records the beginning of a new and striking departure showing this Institute in accord with the new educational movement begun in Massachusetts in 1870, and rapidly extending through the country owing to the stimulus given by the Centennial Exposition, is here given in full.

PREFACE.

PRESENT WORK OF THE INSTITUTE.

The publication of the Twenty-seventh Annual Report of the Spring Garden Institute has been delayed that the committee might have time to add to it a corrected copy of the By-laws, and a corrected list of members, both of which are required to be published annually.

The election of a new Board of Managers, in April last, has led to many important changes in the Institute. The building has been put in a perfect state of repair, the Library has been removed to the first floor, in place of the stores fronting on Spring Garden Street; the Lecture Hall and the entrance thereto from Broad Street, have been greatly improved, and the third floor has been fitted up for the use of pupils in the Technical Schools established by the Institute. Several thousand dollars have been expended in this work, a part of which has already been collected from new subscribers, and it is confidently expected that what may yet be needed will be furnished by the members and friends of the Institute before the close of the year.

In making the alterations to the building, the Board necessarily gave up the revenue derived from the stores on Spring Garden Street, but the success it has thus far achieved warrants it in believing that the increased revenue derived from new members will more than make up for the deficiency. The Spring Garden Institute is not and cannot be a money making institution. Its revenue large or small, as the case may be, should be annually expended in providing instruction, entertainment, and facilities for self-culture for the youth of the neighborhood, and the present Board desires to increase both the receipts and the expenses of the Institution, but to keep them as nearly as possible fairly balanced. It is to be noted that the large expenditure made necessary this year will put the building in complete order, so that hereafter it will require but a small sum annually to keep it in repair, and to extend as occasion may demand, the capacity of its schools for teaching mechanical, architectural and free hand drawing. The Library has been greatly improved, and the reading room is now supplied with the best publications of current literature, so that the friends of the Institute can confidently recommend it to all who desire to use it, or are willing to help provide for the instruction and entertainment of young men and women, compelled to work during the day for their livelihood.

For the present, only two of the three stores on Spring Garden street are used by the Institute. When the term for which the middle store is leased (the spring of 1879) has expired, the partitions separating the stores will be removed, and a large Library and Reading Room on the first floor secured. For the present, the book cases, reading tables, &c., are arranged in a room much too small for them.

It will be noticed, that the report of the former Board of Managers speaks of the night schools, established for the instruction of boys in the common branches of education, as a necessity. The present Board does not so regard them, as since they were opened in this hall, the city has undertaken to give precisely this kind of in-

struction to all who apply, and the Public Schools offer better opportunities to the pupils than the Institute can possibly supply. In place of those night schools, the present Board has established schools to give primary instruction in mechanical, architectural and free hand drawing. In this field the Institute is without a rival, since neither the public schools nor the Pennsylvania Museum and School of Industrial Art, undertake to teach at night, pupils who do not know how to draw. Of the necessity of more or less art education for all workers in mechanical occupations, there is no question, and as long as there is a demand for schools where such instruction is given after working hours, the Institute intends to do its share in supplying that demand.

The committee on publication, have deemed it proper to call your attention to what has been done since the first of April, and what is about to be done, because, the publication of the annual report at this time without such a statement, might have a tendency to interfere with the present work of the Institution, which has grown young again in enterprise and good works since the close of the year, for which reports are made.

Respectfully submitted.

M. J. BROWN, *Chairman.*

MOSES VEALE,

HENRY BUDD, Jr.

ADDISON B. BURK,

Committee on Publication.

The report for the succeeding year, the Twenty-Eighth, 1878-1879, is also given in full as it shows how thoroughly the Institute was revived.

“TWENTY-EIGHTH ANNUAL REPORT OF THE BOARD OF MANAGERS.

To the Members and Stockholders of the Spring Garden Institute:

The fiscal year 1878-'79, has been eventful and memorable in the history of the Spring Garden Institute. Immediately after the annual election in April, 1878, an attractive course of free entertainments was given, popularizing the Institute and paving the way for more serious undertakings.

Having with the aid of James H. Windrim, Esq., architect, devised plans for improving the building and removing the library to the first floor, the Board of Managers gave the necessary notice to tenants to remove and began collecting subscriptions to pay for the work. Delays on the part of the tenants to remove hindered the work and prevented its completion, so that it was quite late in the fall before the building could be formally opened to the public; although before that time large drawing schools had been established on the third floor.

On the evening of November 21, the hall was opened by imposing ceremonies, which were very fully reported in the newspapers, and by calling public attention to the Institute helped to bring in the subscriptions. Vice-President John Baird presided. An address of welcome was delivered by Mr. Joel Cook, of our Board; and the Secretary, Mr. Addison B. Burk, read a report of the work done. Addresses were made by Hon. M. Russell Thayer, Bishop William Bacon Stevens, Hon. William D. Kelley, Hon. A. K. McClure, Hon. John W. Forney and Henry M. Dechert, Esq. Hassler's orchestra furnishing music.

The work done during the year has been unusually great and amounts to the establishment of a new Institute. To meet the cost the members of the Board have been diligently engaged in soliciting subscriptions and during the year have collected, in donations and from members, stockholders and subscribers, \$4,820, or enough to pay for the extraordinary cost of the alterations. There is, however, a

small balance still due, the current expenses having also been increased by the efforts made to popularize the Institute and make it a greater benefactor to the people of Spring Garden. In the reports below will be found the details of the work of the several committees. It will be seen therefrom, that in all departments the Institute is now fulfilling the purpose of its creation. The drawing school is probably the largest in Philadelphia, numbering over 200 pupils. The library, although still in want of recent publications on technical and scientific subjects, has been classified and arranged so as to make the volumes it contains accessible, and 2,132 books have been added to it during the year.

The greater number of books presented were collected at a Book Reception held March 27, 1879, at which a fine musical and literary entertainment was given, admission being obtained by the presentation of a book. Through the exertions of members of the Board over 1,200 volumes, many of them very valuable, were collected before the hall was opened, and about 600 were received at the door. The whole number of volumes thus obtained during the evening was 1,832 and others intended for presentation that night have since been received, making about 2,000 volumes obtained at or on account of the Book Reception. Their value has been estimated by book experts at \$1,200.

The lecture committee has given an admirable course of free entertainments, including concerts, and lectures by scientists and distinguished clergymen; and the hall has been filled to overflowing at each entertainment.

Notwithstanding the loss of two valuable months, the committee on property has succeeded in obtaining \$671 from the rent of the hall, which is daily growing in popularity.

The committee on mineralogy has cleaned, classified and arranged the minerals received when they entered office, and they have obtained a number of new specimens. During the succeeding year it will probably be found desirable to increase this committee and enlarge its special province, so as to include the museum of which the nucleus has been obtained this year. The museum now contains a number of valuable models, placed there by the Public Building Commission, also several fine machine models, &c., presented to the Institute.

An inventory of the property of the Institute, exclusive of the building itself and the library, shows that the Institute now owns furniture, industrial art models, &c., valued at \$1,180, of which \$530 in value have been added during the year. The library which in July, 1878, contained 4,592 volumes on general subjects, and 1,350 volumes of government reports, &c., now contains 6,621 volumes on general subjects, and 1,453 government reports, &c.

The outlook is hopeful for next year.

The museum is sure to grow, the schools if not enlarged, will at least be maintained at their present strength and made still more efficient; the library will be given larger and better quarters, and the number of volumes increased; and the free lectures and entertainments will be increased in number—there is little, if any, room for improvement in their quality.

To do this will require more money than our Board can now command from the fixed revenues of the Institute; but they feel confident that they will receive the generous support of the public so long as they continue to do a manifestly good work, in a manifestly good and economical way.

Particular attention is again called to the detailed reports of committees herewith presented.

By order of the Board.

JOHN BAIRD, *Vice-President.*

ADDISON B. BURK, *Secretary.*

The Twenty-ninth Annual Report, 1880, records the growth of all the departments and announces the opening of the new Schools of

Mechanical Handiwork—an experiment like the Drawing Schools and like them more successful than their promoters had ventured to anticipate.

The Thirty-second Annual Report, for 1882–83, shows a list of membership as follows :

Members in perpetuo.....	48
Life members.....	614
Stockholders.....	88
Annual subscribers (not including number of drawing schools).....	8
Junior subscribers (not including number of drawing schools).....	20
Total.....	778

The following is the official announcement of the

WORK OF THE SPRING GARDEN INSTITUTE,
(NE. Cor. Broad and Spring Garden Streets).

Library and Free Reading Room.—Open from 10 a. m. to 10 p. m. Books loaned to members. Public admitted to the free use of the books, etc., in the library and reading room.

Lectures and Entertainments.—A course of free entertainments—one each week—from October to March of each year.

Drawing Schools.—Instruction given in evening classes in mechanical, free-hand and architectural drawing. Fee nominal.

Day School.—For instruction in drawing, oil, water color, stained glass and china painting, &c.

Schools in Mechanical Handiwork.—Day and night classes for teaching the proper handling of tools, vise and machine-tool work ; a nominal fee, sufficient only to defray actual expenses, being charged the pupils.

Among the resolutions passed by the Board of Managers, on the occasion of the death of John M. Ogden, while President of the Institute, occurs the following historical paragraph, as given in the Thirty-second Annual Report for the year 1882–83:

More than thirty years ago John M. Ogden was associated with a number of gentlemen who established our Institute, some of whom still continue among its managers. He was elected its first President, and occupied that position by annual election to the time of his decease, and largely through his wise counsels the Institute has grown to its present state of prosperity and usefulness.

The Vice President, Mr. John Baird, who, by reason of Mr. Ogden's physical disability, had for five years been the acting president, was elected by the Board to fill the vacancy, and continues to hold the office.

The Institute is governed by its officers, which are President, Vice President, Treasurer, and Secretary, who are elected annually; and by twenty-four directors, called the Board of Managers, eight of whom are elected annually, to serve for three years, and seven of whom form a quorum of the Board, which holds stated monthly meetings. The election of officers and of managers takes place at the regular annual meeting of the stockholders and members of the Spring Garden Institute, held in their hall, on the second Thursday in April,

at which time the Annual Report of the Board of Managers is read, and delivered to the incoming Board for publication.*

The Thirty-second Report shows seven standing committees on "LIBRARY," "LECTURES," "PROPERTY," "ACCOUNTS," "DRAWING SCHOOLS," "MECHANICAL HANDIWORK," and "LAW." The three largest committees are those on the Library (6), Drawing Schools (7) and Mechanical Handiwork (7). "All the work of management is done gratuitously," and the several departments are managed with careful economy.

The spacious building, seen either by day or evening, as the writer can testify from visits paid in December, 1883, is a perfect hive of educational industry, and shows, in every department, evidence of careful supervision by the managers, and of enthusiastic interest on the part of the students, while the library and reading room are thronged with readers.

A brief account of "The work and resources of the Institute" prefaces the annual reports.

The following statements are taken from the Thirty-sixth Annual Report for the year ending June 30th, 1887.

INTRODUCTORY.

THE WORK AND RESOURCES OF THE INSTITUTE.

In order to answer many inquiries that are made in regard to the Spring Garden Institute, which a report of the year's business does not fully disclose, the following statement is made of its work and resources:

The Institute was organized in 1851. From the beginning it maintained a Library and Reading Room, open in the evening, provided a winter course of lectures, and supported evening schools of some kind; for several years drawing schools, after that schools for primary education in reading, writing, etc.

In 1878 the Institute took a new lease of life. At that time the Library was in the third story, and open only in the evening. The night-schools were organized for instruction in reading and writing, and were poorly attended. A large amount of money was collected in the succeeding nine years, and expended in fitting up other school-rooms, removing the Library to the first floor, etc.

At present, the Institute's work is as follows:

On the first floor is the Library and Reading Room. It is open continuously every day except Sundays and legal and public holidays, from 10 A. M. to 10 P. M. It contains about 14,000 volumes, of which about 6,000 have been added within eight years, and, for its size, the collection of books is very good, covering fairly well most departments of literature. It is particularly rich in works of reference. The reading tables are kept supplied with all the leading periodicals, and additions are constantly made to the works of fiction.

On the second floor is a large lecture hall, occupied for Institute lectures, free to the public one night of each week for about twenty weeks, or from October until

*See Thirty-second Annual Report of the Board of Managers of the Spring Garden Institute, northeast corner of Broad and Spring Garden streets, Philadelphia, for the year 1882-83. Spangler & Davis, steam-power printers, 529 Commerce Street, 1883, Pp. 33.

April; also two drawing school-rooms opened in 1885 for Mechanical and Architectural drawing classes.

On the third floor are three large rooms for drawing classes, all of them occupied at nights for six months in the year by classes in Free-hand Drawing. There are also two large workshops on the first floor and three rooms on the fourth floor used by the modeling and life classes. The capacity of the school-rooms is about 250 pupils per night. Each pupil attends two nights per week, thus allowing instruction to be given to about 750 pupils.

The central and north rooms on the third floor are lighted from the roof, and in these rooms instruction is also given to day-classes in painting in all its branches, water and oil color, china painting (over and under glaze), stained glass painting, etc. There is also on this floor, for the use of the day-classes, a studio and kiln-room in which is erected a furnace, where the ceramic works of the pupils are fired or baked.

On the first floor two large apartments are fitted up with benches, machine tools driven by a gas engine, and all the appliances of first-class machine and pattern shops. In this department instruction is given in Mechanical Handiwork to classes meeting in the day and at night. The schools have a capacity of about 80 pupils per night. Two rooms on the second floor are also used by this Department, which has accommodations for about 300 pupils.

MEANS OF SUPPORT.

The general expenses of the Institute are not met by the revenues of the property. The lecture hall is rented, and the revenues therefrom amount to less than \$700 per annum. This is not as much as is required to pay the expenses of Janitor and cleaning.

The Lecture Committee pays the cost of lectures, entertainments, etc., first by the sale of reserved seats to its lectures, at a nominal price (one dollar for the whole course); second, by the profits of one or more paid entertainments; third, by the publication of a JOURNAL (which also serves as a programme), in which advertisements are inserted.

The schools are supported first, by the fees of pupils; second, by an annual contribution from the Young Men's Institute; third, by the interest on an endowment fund, which is still insufficient for the purpose. The fees of pupils in the night-classes are merely nominal. The payment of \$5.00 in the Drawing Department or in the Mechanical Department makes the contributor a *subscriber* to the Institute, and a subscription entitles one first, to the use of the Library; second, to admission for two nights per week to the schools; third, to admission to all lectures of the Institute.

The fees of pupils under this arrangement are about enough to pay the actual cost of tuition.

The day-class, in painting, etc., being attended by people of means and leisure, the charges, \$20.00 per term of about twenty weeks (\$40.00 per annum), although they are low, are sufficient to pay the cost of tuition, provided full classes are obtained.

The day-classes in Mechanical Handiwork are also self supporting, the pupils paying \$90.00 per annum.

The object has been to make all the night-classes as nearly free as it is desirable to make them, and thus extend the benefits of the Institute to the largest possible number of pupils; but to make sure that this object can be attained without requiring the managers to make constant appeals to the public for help, it is necessary that the Institute should have an endowment fund of at least \$50,000.

SOME OF THE RESULTS.

All departments of the Institute are managed with the greatest possible economy, consistent with the attainment of the best results. The teachers in the night-schools are practical draughtsmen and workmen, employed during the day in large industrial establishments, and the Managers themselves devote a great deal of time to the practical work in all departments of the Institute. In the natural course of events, the schools have become employment agencies for the pupils who enter them, and we are glad to know that as a result of the instruction given to the pupils, many of them have already obtained desirable situations, and others have been advanced in their chosen professions.

THE INSTITUTE MAINTAINS NO PAID OFFICERS.

All of the work of management is done gratuitously, and for this reason the Managers appeal with confidence for liberal support to all who have the interest of the rising generation at heart.

To give at a glance an idea of the work done in the last few years, the table of receipts and expenditures on the next page is published. It should be remembered that in 1877-'78 (which was neither better nor worse than preceding years), the receipts were only \$2565.88, and the expenditures \$2088.61; the only work carried on being a brief lecture course, the opening of the Library in the evenings, and the maintenance of a night-school with an average attendance of 31 pupils:

Receipts for nine years.

	1878-'79.	†1879-'86.	1886-'87.	Totals.
Balance from treasury	\$1,402.40			\$1,402.40
Donations	1,104.00	\$37,698.02	\$18,905.56	57,607.58
Spectal donations (schools)	300.00	4,939.46	35.68	5,275.14
Membership fees	3,100.00	4,854.00	30.00	7,984.00
*Annual and junior subscribers.	616.00	11,479.00	2,224.00	14,319.00
Rents	1,291.00	10,783.64	507.50	12,582.14
Lectures	140.75	3,863.89		4,004.64
Tax on stock	91.00	785.33	4.00	880.33
Fees of pupils' mechanical classes		11,804.85	3,521.18	15,326.03
Fees of pupils' art school (day)		5,171.32	1,220.00	6,391.32
Interest on endowment fund		3,372.00	1,238.80	4,610.80
Miscellaneous	61.96	1,514.53	59.86	1,636.35
	8,107.11	96,266.04	27,646.58	132,019.73

Expenses for nine years.

	1878-'79.	†1879-'86.	1886-'87.	Totals.
Improvements to property	\$4,409.42	\$11,987.35	\$56.14	\$16,452.91
Drawing school teachers	800.00	16,303.36	3,521.25	20,624.61
Drawing school supplies	209.94	3,683.45	94.77	3,988.16
Mechanical handiwork teachers		10,198.38	3,926.96	14,125.34
Mechanical handiwork supplies		6,649.78	308.22	6,958.00
Library (new books, etc.)	115.08	2,035.34	245.07	2,995.49
Library expenses	463.91	2,914.96	415.92	3,794.79
Lectures and entertainments	434.83	3,815.31	19.00	4,269.14
Gas, coal, taxes, etc.	1,095.01	10,368.54	1,101.71	12,565.26
Janitor and miscellaneous	683.76	8,677.35	1,252.03	10,613.14
Printing and advertising		705.72	339.38	1,045.10
To pay principal of ground rent		3,000.00		3,000.00
	8,211.95	80,939.54	11,280.45	100,431.94
Endowment fund invested				31,500.00
Balance on hand				87.79
				132,019.73

* Includes fees of pupils in night-classes for drawing.

† Includes from April, 1879, to July, 1886.

It is evident that the movement in 1878, just referred to, was one which infused new life. The ground floor of the building, which had been let in stores and so added to the income, was all taken for the educational uses of the Institute. A series of changes resulted which, in five years, necessitated an expenditure of some ten thousand dollars, upon the alterations, including the school fittings, and the plant of engine, lathes and other machines, benches, and tools for the new mechanical schools.

Meanwhile by subscriptions, in 1879, "the Institute was relieved of the ground rent of \$3,000;" one thousand dollars was also given for immediate purchase of new books for the library, and a nucleus of several thousand dollars was secured towards an endowment fund.

All the changes looked to providing the best facilities for instruction in the schools, and for increasing the kinds of instruction as well as to improving the library and adding to the attractions of the reading room. For the removal of the ground rent of \$3,000, there were thirty contributors of \$100 each, whose names are given in the Thirtieth Annual Report (1880-81); eleven additional contributors gave the \$1,000 for the library.

The Baldwin Locomotive Works gave \$100 towards the classes and offered two valuable prizes for excellence in the mechanical drawing classes; Mr. George W. Childs, in addition to his contribution, instituted prizes for the class in free-hand drawing; Mr. John Baird, the Vice President, also offered prizes for the architectural drawing classes. Some twenty free public lectures and entertainments were given, under the auspices of the lecture Committee, in the second story of the building, which is a large audience hall, the expenses being more than met by a small charge for reserved seats, and by one or two pay entertainments for the benefit of the lecture fund. The Institute published a journal, which served also for a programme of the lectures. One of the lectures was on the "Popular use of Modeling in Clay," by Edward H. Spring, the sculptor, "which proved very interesting because of its novelty;" and one was on "Cooking as it should be," by Mrs. S. T. Rover, "teacher at the New Century Cooking School," which resulted in the organization of a cooking school class in the Institute. The first course of lessons was so successful that a second course was held, and in the Thirtieth Annual Report an account is given of the successful experiment which entailed only the cost of a gas stove, in addition to the salary of the teacher; so that the ultimate cost to the Institute was fully met by the pupils' fees. "The school, besides, has done its full share in awakening interest in the Institute's work on the part of ladies who, if they could be induced to assist the management in its work, would greatly extend the influence of the Institute for good." No mention is made of cooking classes in subsequent

Reports. The reports of the committees on the schools show great activity and progress in the several classes; the day art classes were also prosperous.

During the succeeding year (1881-82) skylights were put in the third story, for enlarging the facilities for the drawing and art classes, while rooms in the basement and the first story were fitted up for the use of the mechanical school. A kiln for baking porcelain, with a tall chimney stack, was also built.

Special contributions were made by friends of the Institute for the several purposes during the years 1880-81, and 1881-82, the lists of contributors being given in the annual reports of those years. A brief summary of "extraordinary" receipts and expenditures for 1881-82 shows those receipts to be \$16,420.46, expenditures \$10,465.73, the difference going to swell the "endowment fund."

In their Annual Report for 1882-83, the Board of Managers say :

The year now ended has been one of great activity and usefulness. Our schools have been largely increased in capacity, and costly additions have been made to the plant. We have been liberally supported, also, by the friends of art and mechanical education, but on account of the growth of the schools, have been obliged to spend more than we have received. It is for this reason that an endowment fund of fifty thousand dollars is so much needed. Our income from rents is precarious, and is likely to be materially and permanently reduced in the near future by the growing demands of the schools for room to expand. Every such enlargement involves an outlay of capital, and however closely each department may be managed, the current receipts cannot be expected to meet both the current expenses and the cost of enlargements. With an endowment producing say \$2,500 per annum, the Institute would be enabled to use all parts of the building except the lecture hall for Institute work, and would be secured against the fluctuations in rental income.

* * * * *

The most noteworthy contribution to the Institute made during the year was that of \$5,000 to the endowment fund, by "A Friend of Art Education," through Mr. Charles D. Reed. This anonymous friend had already contributed liberally to the support of the schools, and his renewed generosity was appreciated by the board as an acknowledgment of the good use made of his first contribution. Mr. Wm. M. Singerly also contributed \$1,000 to the endowment fund.

Mr. James S. Whitney contributed \$500 to establish a pattern shop, which was accepted and the shop equipped. A similar gift of \$400 for an extension of the Drawing Schools was received from Burnham, Parry, Williams & Co., of the Baldwin Locomotive Works, but it has been held in the Treasury as a special fund until it has been determined whether the conditions of the gift can be complied with.

The Drawing Schools were improved during the year, first, by the building of new desks for the north room, of a design particularly adapted for free-hand drawing from copies; second, by increasing the number of lights in the north and south rooms so as to give each pupil a separate burner; third, by an increase in the number of desks in the middle room used by the day classes; fourth, by the purchase of several hundred casts from the collection approved by the Council of the South Kensington Museum, England.

The Mechanical Handiwork Department was greatly developed by Lieut. Robert Crawford of the United States Navy, who was detailed by President Arthur to superintend the instruction given in that department. A pattern shop was provided

with tools through the liberality of Mr. James S. Whitney, who contributed \$500 for that special purpose, and many new and costly tools were added to the plant.

During the year the Board sent to Councils and to the Board of Education propositions to establish normal schools for the instruction of teachers and pupils of the Public Schools in drawing and Mechanical Handiwork, but we have not yet received any communication from those bodies on the subject. The institute having a large and costly plant idle during the day, would be enabled to organize such schools and carry them on at much less cost to the city than would be involved in any attempt to establish new schools of the kind. The offer was made in the belief that such schools should be tried experimentally at first, at the least possible cost before the city organized a Technical College of its own. It is not proposed that the Institute shall profit from such an undertaking more than to get a reasonable return on the value of its plant, the offer being made solely in the interest of the public. It is hoped, therefore, that during the coming year, the Board of Education may give consideration to the proposition in the interest of practical education in the Public Schools.

The number of pupils in the Drawing Schools was 472, and in the Mechanical Handiwork Schools 181, total 653. 9,030 books were loaned from the Library, and there were 22,042 readers in the reading room.

They also record additions to the Library by purchase of new books at cost of \$200 and of many new periodicals, and point out the need for an annual expenditure of at least \$600 per year in new books, if the library is to be properly kept up; they note that "an exceptionally fine course of free lectures was given to large audiences," and add:

This brief summary of what has been accomplished is sufficient to show that, the Institute has lost none of its vitality, but that it is still vigorously working for the moral, intellectual and industrial improvement of the young people of the city. There are probably not less than a thousand individual boys and girls who in one way or another, derive benefit from the education afforded by the Institute, and we have abundant evidence that the schools have done a grand work in the training of useful mechanics, whose increased skill will prove in the future of pecuniary benefit to themselves and add to the reputation and honor of this great manufacturing City. With such results achieved and the way clear before us for its continuance, the Board of Managers confidently appeal to the public for the means of maintenance, and particularly for such an increase of the endowment fund as will relieve them of the constant strain put upon them by the want of sufficient means to meet current and necessary expenses.

By order of the Board.

JOHN BAIRD, *President*.

ADDISON B. BURK, *Secretary*.

In their report for the succeeding year, (1883-1884), the Board of Managers acknowledged their continued indebtedness to liberal friends, but say that, owing to the new educational facilities provided, they are still in debt; they also call attention to the inconvenience of making the end of the fiscal year in April, since many of their expenses necessarily continue during the summer months—amounting to some \$2,000—while their income from rent of lecture hall, tuition of pay students, etc., is practically cut off.

For five years we have been engaged in enlarging and equipping the Institute. We seem at last to have reached the limit for the extension of the schools, so that we can now give close estimates of our future receipts and expenses. These show that if the Institute should be entirely free from its present indebtedness, so that in April of each year it could have a balance on hand sufficient to meet the summer expenses, it would need the revenue of an endowment fund of at least \$50,000 to maintain the schools. This is, frankly, our position. We need sufficient money to meet our present and prospective debts, and also, an increase of our endowment fund to \$50,000. Until these wants have been met, the managers will be compelled, in addition to their other labors, to make periodical appeals to their generous friends for assistance.

All the work of the Institute has been done on the most economical basis. Our teachers' salaries are moderate, and their classes are large. We have, moreover, the free services of Lieut. Crawford, as Superintendent of the Mechanical Schools—a relation that may at any time be severed. The importance, therefore, of increasing the endowment fund for the schools must be plain to every one.

They then proceed to recite the direct and indirect influence of the school upon other schools, and thus illustrate one of the most encouraging experiences to earnest workers—the far-reaching and reproductive power of a single successful effort to help a community.

Although it is not wholly a result of last year's work, it is proper at this time to mention some of the indirect good done by the Institute schools. They have compelled an improvement in every "A" school that is in any way brought in rivalry with them. The Mechanical Schools have been the models from which were taken those of the Girard College, now in successful operation, and those of the House of Refuge about to be started. They have moreover, incited the Master Plumbers' Association to organize a trade school, the first of its kind in this city, and which was organized in the Institute. These results alone fully repay our subscribers and benefactors for the money they have contributed. But in addition, we have the direct good done to more than eight hundred pupils, and the prospect that our example will result in an improvement in the whole educational system of the Public Schools.

There were 826 pupils in the schools during the year. Of these there were 595 in the Drawing Schools, and 231 in the Mechanical Handiwork Schools, 140 of the whole number being Day pupils.

But the schools, large and useful as they are, represent only a part of the good work done by the Institute. The Library, which is kept open daily from 10 a. m. to 10 p. m., and is liberally supplied with current literature, had 22,493 readers during the year, and 8,839 books were loaned to pupils and members. A free lecture course was also maintained, and the lectures were largely attended. * * *

In January the Master Plumbers' Association was given the use of one of the basement shops, and there, organized a trade school which was so successful at the start that it has already moved to larger and better quarters. During the year we have had many interested visitors to the school, prominent among the number being the Directors of the Young Man's and West Philadelphia Institutes and of the House of Refuge, who came as representatives of their respective institutions, and were formally received by your Board.

The report for 1884-1885, is a very encouraging one, since the freedom of the Institute from debt is announced, though a sufficient endowment fund for permanent prosperity is not yet secured. The following quotations show the work accomplished during the year :

REPORT OF THE BOARD OF MANAGERS.

To the Members and Stockholders of the Spring Garden Institute :

The year which has just closed has been one of great encouragement to the managers of the Spring Garden Institute notwithstanding the business depression, the effect of which was seen in diminished attendance in the night classes. There were 673 pupils in the schools, 509 in the art, and 164 in the mechanical department. * * *

An attempt was made last year to equalize the fees of pupils and to increase those of the day pupils in Mechanical Handiwork, with good results. The fees of pupils in the night classes are now based upon a uniform rate of five dollars per annum. Pupils in classes to which the Institute supplies materials, as in mechanical handiwork, wood carving, modeling, etc., were charged twelve dollars.

The fees of the drawing school pupils are, as they were intended to be, about sufficient to meet the actual cost of tuition. The mechanical handiwork department produces an apparent profit, due to the fact that the services of the Superintendent are free. As this arrangement is liable to be broken at any time and the Institute compelled to pay a superintendent, it would not be safe to reduce the fees, especially in the day classes, below an amount sufficient to cover the actual cost of tuition.

In April, of last year, a fine exhibit was made of the works of pupils which attracted much attention, and subsequently the pictures and works of the mechanical department were displayed in frames and cases on the stairways and corridors of the building.

On May 5th the Board paid a visit to the House of Refuge Schools which have been organized as a result of our pioneer work, and later in the season attended the opening of the Girard College schools, also largely influenced by our example. During the summer a link-motion valve gear, made at the Institute by pupils of the University of Pennsylvania, was presented to the latter institution, and arrangements were made for teaching another class of the University pupils. * * *

An exhibit of the Institute's work in art and mechanical handiwork was prepared and sent to the Cotton Centennial and World's Exposition at New Orleans, which met with very favorable notices from the newspapers. * * * The prospect is bright before us and within the limits of its opportunities, the Spring Garden Institute can be relied upon to give a good account of the work done in the twelve months upon which we are about to enter.

By order of the Board.

JOHN BAIRD, *President.*

ADDISON B. BURK, *Secretary.*

PHILADELPHIA, *April, 1885.*

The following statements from the next Report* announce the change of the time for making the Annual Report, in accordance with the suggestions made in the Report for 1883-84.

REPORT OF THE BOARD OF MANAGERS.

To the Members and Stockholders of the Spring Garden Institute :

At the Annual Meeting, in April, 1886, it was determined to apply to the court for a change of the time of the Annual Meeting from April to July, and to make the

*Thirty-fifth Annual Report of the Board of Managers of the Spring Garden Institute, northeast corner of Broad and Spring Garden Sts., Philadelphia. For the 15 months ending June 30, 1886. Spangler & Davis, steam-power printers, 529 Commerce street. 1886, Pp. 33.

report for the year that had passed conform to that change. The purpose was to make the charter year correspond with the fiscal year, as regulated by the school term. The accounts of the schools representing the chief work of the Institute, and the principal receipts and expenditures, cannot be closed until the middle of June, and by having the annual report made up to the end of that month it becomes possible to show the actual financial condition of the Institute when its year's work is done. By the former method of publishing the report in April, a large balance was sometimes shown in the hands of the Treasurer, when, in fact, the obligations accruing before the end of the school term were more than sufficient to consume all funds in hand. This will be corrected by the change of date of the Annual Meeting. The present report is for fifteen months, ending June 30, 1886.

The year 1885-'86 has been one of continued encouragement to the Board of Managers of the Institute, notwithstanding the unchanging business stagnation of the neighborhood, which, in some departments of the Institute, reduced the number of pupils in our school. * * *

Very little change was made during the year in the organization of the schools, but early in the season efforts were made to provide the Mechanical Handiwork Department with better quarters. It was at first proposed to rent rooms outside, but nothing suitable being offered, it was determined to provide for them in the building. With this end in view the Lecture Room was reduced one-half, the southern part being divided into two drawing class-rooms. The north rooms on the first floor were utilized as work-rooms—one for wood and the other for metal work, and a stairway constructed to the basement (heretofore the workshops), where the Mechanical Classes now have their lavatory and closets.

The Drawing School rooms on the second floor, together with the workshops, give ample accommodation for the Mechanical Department, and also enable the Managers to devote the whole of the third and fourth floors to the Free-Hand Department.

Lieutenant Crawford, having resigned as Superintendent of the Mechanical Department, to accept a similar position in the City's Manual Training School, Mr. Arthur L. Church was elected to that position. Mr. Church served until the end of the term with Mr. W. H. Norris as his assistant, Mr. Norris succeeded as Superintendent when Mr. Church left the Institute to accept a responsible position in the Baldwin Locomotive Works.

Prof. Wm. A. Porter remained in charge of the Art Department, Mr. Wm. Haefeker being appointed his assistant for both day and night work.

In April, 1885, and in May, 1886, fine exhibits were made of the works of pupils in both departments, which attracted great numbers of visitors and were favorably mentioned in the newspaper press. At the closing exercises of the Schools, in both years, medals were awarded to the pupils, and graduates of the school for a full course were given their diplomas.

No lectures were given during the year, but it is probable that they will be resumed during next season. Notwithstanding a reduction in the size and price of the Lecture Hall, the revenue therefrom was within \$70 of the amount received from rents during the preceding year. The Lecture Hall has, in fact, been improved by its reduction in size, and promises to be more useful to the Institute hereafter.

* * * * *

In reorganizing the Schools for 1886-'87, the fees of all Night Classes were made uniform at \$5 per annum. This is in accordance with the well-settled policy of the Institute to give the cheapest possible service to the young men and women who are employed during the day and who desire to make good use of their winter evenings in study. The Day Classes are expected to be at least self-supporting. The

fee for the Art School remains as heretofore at \$40 per annum; that for the Mechanical Handiwork Classes has been made uniform at \$90 per annum.

The Managers have again to acknowledge liberal help from their friends. The Institute is now passing through a test period. If its endowment fund or the revenue from its schools can be increased this year, so as to provide sufficient funds for the maintenance of its work on the present scale, the existing scheme will be continued; but if there should be an annual deficit it may become necessary to abandon some of the departments of the Institute's work to insure the maintenance of those that are deemed of greatest value and importance. We have every reason to hope, however, for liberal support of the Institute in all its undertakings, and shall try, as heretofore, to maintain it free from debt and on a sure financial foundation.

JOHN BAIRD, *President.*

ADDISON B. BURK, *Secretary.*

PHILADELPHIA, June 30th, 1886.

The Thirty-sixth Annual Report for the year ending June 30th, 1887, gives a most encouraging account of the prosperity of the Institute. The long continued efforts to secure an endowment fund have resulted in an accumulation of such a fund to the amount of \$31,500. The annual expenses of the Institute, which were \$8,211.95 for the year 1878-79, were \$11,280.45 for 1886-87; but, while the receipts in the former year were only \$8,107.11, they amounted to \$27,646.58 in the latter.

It is still proposed to secure an endowment fund of \$50,000, with the aid of the interest of which it is thought the Institute, as now managed, will be self-supporting. It may, however, be pretty surely argued that new needs for development will constantly present themselves to the liberal, wide-awake managers; and that, probably, their real usefulness to the community may rather be measured by the additional sums they are annually called on to contribute to the resources of the Institute than by their living on a fixed income. Growth seems to be essential to life, and it is only dead societies that incur no debts. Doubtless the Library, which hitherto seems to have been less liberally supported than the schools, because the need was less pressing, will soon come in for a far larger annual expenditure than has hitherto been allowed.

REPORT OF THE BOARD OF MANAGERS.

To the Members and Stockholders of the Spring Garden Institute:

The fiscal year of 1886-'87, (from July 1st, 1886, to June 30th, 1887), was in many respects the most successful we have had since the reorganization of the work of the Institute in 1878.

The financial support given to the Institute enabled it to pay its floating debt and end the year with a slight balance, while the sum of \$15,500 was added to the endowment fund. The work of the Institute was successfully carried on, mainly on the old lines, but with a few changes in fees that promise to yield good results. There has been, no doubt, for several years of the usefulness of the Institute's work in all departments, but, there has been for some time a practical question troubling your Board of Managers—whether it was sufficiently appreciated to receive the

financial support of the public. Thus far a few generous subscribers have come forward every year and by their contributions have enabled the Board to meet expenses, so that the Institute is now very much better off financially than it was when it began work on the present large scale. But these contributors are few in number and it is not safe as a business policy to count upon such means for permanent support. The Board has therefore endeavored to obtain an endowment fund to cover the general expenses of the Institute, and to so adjust the fees paid by the pupils, that while extending the largest measure of educational charity to night pupils, the schools may also be made to pay the actual cost of instruction. A large increase of the endowment fund during the year just closed adds to our income and encourages us to believe that the Institute may in time be made self-supporting, but, it is not yet in that position, and we are still dependent upon annual contributions to meet inevitable deficiencies.

The fees for all night pupils were made uniform at five dollars for the term in the year just closed. This fee is merely nominal. It is, however, sufficient to meet the actual cost of tuition and it is the aim of the board to provide for other expenses, either from an endowment fund or other sources. The fees for day pupils in the Art Schools remained at \$40.00 for the two terms, into which the year is divided. This rate is fixed by competition. It cannot be increased, and there is no reason why it should be lessened, as the pupils who attend day classes are able to pay the full cost of instruction. The fees for day pupils in the Mechanical Handiwork classes were made uniform at \$90.00 for the two terms. This is an increase on the rates heretofore charged, but it is less than the cost of equivalent instruction in other preparatory schools. Our revenues from this source would have been larger but for the fact that the new fee was not collected from former pupils with whom the Institute might be considered to have a kind of contract not to increase the rates. Experience shows that the Institute will gain, rather than lose, by this change of rates. The fee for the use of the Library to others than pupils of the school, to whom it is free, was reduced from \$2.00 for minors and \$3.00 for adults, to a uniform rate of \$1.00 per annum with the purpose of increasing the use of the Library by the general public. The reports show a considerable increase in the number of annual subscribers, but the revenue from this source is still inconsiderable. The policy of the Board has been, in brief, to extend the benefits of the Institute as widely as possible to the classes for which it was established at merely nominal fees and not to use its funds for the benefit of day pupils able to pay for the instruction they receive. The day schools are at present very nearly self-supporting, and it is believed that the small amount of money expended on them from the general fund brings a fair return to the Institute in the character of the teachers they enable us to employ for the night classes and in the advertisement they give to our work.

The instructors of our schools remained the same as in the preceding year, Mr. William H. Norris continuing at the head of the Mechanical Department, and Prof. Wm. A. Porter as principal of the Art Schools. The same teachers have been re-engaged for the season of 1887-88. Fine exhibits of the work of the schools were given in May, and at the closing exercises medals were awarded to the pupils who distinguished themselves in the Day and Night Class. That the pupils in the latter classes may not hereafter be discouraged by being put in apparent competition with the day pupils who have much more time to devote to their work, it has been determined to hold separate exhibitions of the work of the day and night classes.

But one lecture was delivered during the year. Arrangements had been made to revive the lecture course, but the illness of the chairman of the committee, Mr. Spangler, prevented the fulfillment of this design, as no other member of the committee felt himself competent to take up the work so ably done by that gentleman and to which he was expected to return.

The death of our treasurer, Wm. Hobart Brown, February 14th, 1887, was a sad loss to the Institute, as it was to the community, for his whole life had been spent in the active work of charity. Mr. Brown was one of the earliest members of the Institute and at one time was a volunteer teacher of Mechanical Drawing. He renewed his interest in its work when he was elected treasurer in 1878, and from that time until the day of his death was not merely the faithful custodian of its moneys, but aided very largely in the collection of contributions which enabled it to carry on its increasing range of charitable enterprises. He attended to all the business of the Institute as faithfully as though it had been his personal affair, and for all his services received no other return than that which comes to the good servant in the knowledge of duty well done. The Board of Managers closed the Institute in respect for his memory and attended the funeral services in a body, seeking in this way to attest their sincere appreciation of his faithfulness. Mr. Orlando Crease was subsequently elected treasurer of the Institute, and during his absence Mr. Fred. McOwen has acted as treasurer pro-tem. * * *

In less than ten years we have paid off a debt of \$3000, added at least \$20,000 to the value of the property and plant, including library of the Institute, and raised an endowment fund of \$31,500, besides giving instruction every year to 500 or 600 pupils in the night classes alone. Such results may be trusted to speak for themselves, yet, the fact remains and should not be forgotten that our work is not yet done, and that from some source an additional revenue of about \$1500 per annum must be obtained to put the Institute on such a self-supporting basis as will relieve its friends and the Board of Managers of constant solicitude about the means required to meet its expenses.

The Board again returns its thanks to the generous friends of the Institute whose contributions have done so much to forward the good work of the Institute, and enabled us to make such a favorable report of its improving finances.

JOHN BAIRD, *President*.

ADDISON B. BURK, *Secretary*.

The following account of an exhibition of the work of the pupils in the schools and classes of the Institute gives a good idea of its usefulness:

EXHIBITION OF SCHOOL WORK.

[Public Ledger, May 17, 1887.]

A private view to invited guests was given last evening of the works of pupils in the Art and Mechanical Schools of the Spring Garden Institute. About four hundred guests attended, among whom were Ferdinand J. Dreer, A. Boyd Cummings, Charles J. Harrah, John Bardsley, James S. Biddle, Alfred Love, Walter Wood, Judge Fell, Rev. Charles G. Ames, John J. Weaver, Rev. Joseph Newlin, Amos Bonsall, Joel R. Cadbury, William Harkness, David S. Cresswell, Thomas L. Gillespie, Thomas Wood, and Thomas U. Walter. Messrs. John Baird, Isaac C. Price, James H. Windrim, Edward Longstreth, Orlando Crease, John E. Baird, William H. Crawford, John Smethurst, John S. Stevens, Fred McOwen, V. E. Archambault, and Addison B. Burk, of the Board of Managers, received the guests and explained the exhibits. On the second floor are the Mechanical Handiwork Department displays on two long tables, work in wood and metal, done by pupils in the day and night classes. The work in wood is elementary, the making of various kinds of joints, turning, etc., and also pattern making, of which some fine samples are shown.

The display is very large and attractive, all the work being finely finished. In metal exhibits there is a large assortment of work designed to teach chipping and filing, turning, fitting, etc., as well as the application of these principles to the fin-

ishing of castings made from the wooden patterns. Several finished dynamo machines and steam engines are exhibited. Around the wall are displayed mechanical and architectural drawings. From some of the mechanical drawings the patterns were made, and from these the castings, which were afterwards finished by the pupils in the machine shop.

On the third floor were exhibited the works of the Art Department. These include every grade of free-hand drawing, from the outline sketch to paintings from life, in oil and water color, and include original designs for wall papers and oil cloths, some of which, having been sold to manufacturers, are shown also as reproduced by them. Several of the still-life pictures by pupils were in the recent annual exhibition of the Academy of Fine Arts. This part of the exhibition is particularly attractive, on account of the beauty of the decorative work. There are about four hundred framed pictures on exhibition, and as many samples of work in the mechanical department. The exhibition is to remain open to the public during the week, from 2 until 10 o'clock each day.

The record of membership for 1887 shows a total of 848. The names of members are given in the Thirty-sixth Annual Report (June 30th, 1887).

OFFICERS, 1887-88.

President: JOHN BAIRD, 1705 North Broad street.

Vice President: ISAAC C. PRICE, 1825 Mt. Vernon street.

Treasurer: ORLANDO CREASE, 1347 Spring Garden street.

Treasurer pro tem.: FRED. MCOWEN, 216 South Third street.

Secretary: ADDISON B. BURK, 1024 Brown street.

Assistant Secretary: M. J. BROWN, 1117 Mt. Vernon street.

Board of Managers.—To serve three years from April, 1886: William H. Crawford, 723 North Seventeenth street; Frederick McOwen, 216 South Third street; James H. Windrim, 817 North Broad street; Joel Cook, 849 North Broad street; W. L. Austin, Broad and Spring Garden streets; V. E. Archambault, 1316 Spring Garden street; Edward Longstreth, 1805 Spring Garden street; Arthur L. Church, Broad and Spring Garden streets.

To serve two years, from April, 1886: T. Broom Belfield, 1905 Spring Garden street; E. S. Wills, 1605 Poplar street; B. W. James, M. D., 1719 Green street; John Smethurst, 1241 Ridge avenue; Orlando Crease, 1347 Spring Garden street; George W. Thompson, 1335 Spring Garden street; John E. Baird, 1705 North Broad street; John S. Stevens, 1127 Mt. Vernon street.

To serve one year, from April, 1886: M. J. Brown, 1117 Mt. Vernon street; H. G. Sickel, 1209 Wallace street; A. M. Spangler, 1015 Mt. Vernon street; Thomas Wood, 2028 Spring Garden street; Henry M. Worrall, 4519 North street; Charles N. Thorpe, Nineteenth and Brown streets; Charles S. Heller, 621 North Twelfth street; Joseph J. DeKinder, 626 North Eleventh street.

STANDING COMMITTEES, 1887-88.

On Library.—Smethurst (chairman), Archambault, Sickel, Wood, M. J. Brown, Heller, DeKinder.

On Lectures.—Spangler (chairman), Burk, McOwen, M. J. Brown, Cook, Church.

On Property.—Crease (chairman), Thompson, Wells, Worrall, Longstreth.

On Accounts.—McOwen (chairman), John E. Baird, M. J. Brown.

On Drawing Schools.—Windrim (chairman), Crawford, Burk, Smethurst, John E. Baird, Austin, Thorpe.

On Mechanical Handiwork.—Crawford (chairman), Worrall, Stephens, Wood, DeKinder, Longstreth, Church.

On Law.—Price (chairman), Cook, James.

The Thirty-Seventh Annual Report, for the year ending June 30th 1888, indicates little change in the condition and work of the Institute. The Institute participated in the Industrial parade which was a feature of the "Constitutional Centennial" celebration by sending two "floats," one showing the work done in the Art Department, and a similar one for the Mechanical Department. As the building commanded a view of the procession the windows were rented to sight-seers. The receipts from this source amounted to over eleven hundred dollars, out of which fund the expenses of the parade were met and the balance a sum of between eight and nine hundred dollars was given to the purchase of new books and for other needs of the Library.

REPORT OF THE BOARD OF MANAGERS.

To the Members and Stockholders of the Spring Garden Institute:

There is little to add to what is shown in the Treasurer's report in order to present a picture to the stockholders of the work of the Institute during the year. The schools and other departments were maintained on the same lines as heretofore. There was a gratifying increase in the number of pupils in the night-classes, (which represent the charitable work of the Institute,) but there was a slight decrease in the number of pupils entered for the day-classes. The revenues from the day-classes (making an allowance for bills receivable) fell off about two hundred dollars, but the expenses for teachers' salaries were also reduced to about the same extent, so that, financially, the schools show no material change. In order to encourage the pupils in the evening classes a separate exhibition of their works was given at the close of their term, which was largely attended. Separate closing exercises were also held for the day and night-classes. The Library Fund was enriched by the receipts from the rental of windows during the celebration of the Centennial of the Constitution, and besides the usual expenditures for re-binding, the Library Committee was enabled to purchase nearly \$700 of new books. These were selected with great care. The reference library was strengthened, but the principal purchases were of scientific and mechanical works for the special use of pupils. A few novels and other works of light literature were also bought to increase the attractions of the library to other classes of readers. The revenue from the hall was greatly reduced, falling much below the average. If the rentals had amounted to as much as last year, the treasurer's report would have shown a balance on hand instead of a deficit. The general expenses remained about the same as last year. One thousand dollars was added to the endowment fund—a legacy from the estate of James S. Mason, deceased, which brings the endowment up to \$32,500. Great relief resulted from the increase of the endowment fund made last year, the interest amounting to \$1,755, or \$500 more than the previous year. Financially, the Institute is in almost exactly the same condition as last year. Its bills receivable will give the Treasurer a small balance after all obligations have been met. A study of the reports shows, however, that, as mentioned in the last annual report: "from some source an additional revenue of about \$1,500 per annum must be obtained to put the Institute on such a self-supporting basis as will relieve its friends, and the Board of Managers, of constant solicitude about the means required to meet its expenses."

There were 661 pupils in the schools during the year, 536 being in the night-classes and 125 in the day-classes.

The library was visited by 18,011 readers, and 6,402 books were loaned.

The Treasurer's report shows expenses amounting to \$12,306.68. Of this, \$3,646 was expended on the drawing schools, \$4,181 on the mechanical schools, \$1,540 on

library account, \$1,269 on property, and \$1,700 for general expenses. The receipts amounted to \$12,053, leaving a balance of \$253.68 due the Treasurer. The receipts include \$6,700 from fees of pupils, \$1,755 interest on endowment fund, \$2,060 from donations, and \$1,500 from miscellaneous sources.

Reports in detail of the work of the year are appended.

JOHN BAIRD, *President.*

ADDISON B. BURK, *Secretary.*

In the report for the following year the announcement is made that the mechanical day schools—the manual training schools—were to be closed. These schools, which at one time formed so striking a feature of the Institute being among the first of this class opened in the City, are really closed by reason of the success of the experiment which they were opened to inaugurate, which has led to the opening of other schools; so that these are no longer needed or self supporting.

REPORT OF THE BOARD OF MANAGERS.

To the Members and Stockholders of the Spring Garden Institute:

The publication of the thirty-eighth annual report of the Institute has been delayed in consequence of the loss of the papers from which it is usually compiled and the difficulty of making it up without this memoranda. It is now published (January 1890) in an abbreviated form to make the record complete, especially that of the Treasurer.

The Drawing and Mechanical Schools were carried on as usual in 1888-'89, and the attendance was larger than ever before, except in the night school for mechanical handiwork, where there was a slight falling off. The number of pupils in the night classes in drawing was 482 and in the night classes for mechanical handiwork 76.

The day classes in art and mechanical handiwork were well attended, but during the year notice was given that the Soldiers' Orphans would be withdrawn from the Home in this city, and that the University of Pennsylvania was about to establish workshops of its own. These withdrawals would reduce the revenue of the Mechanical day schools to such an extent that the required staff of teachers could not be maintained and it was determined to close the day schools at the end of the term. They had accomplished their purpose in establishing in Philadelphia this system of instruction and were not an integral part of the charitable work of the Institute. There had been 41 pupils in the day classes during the term, but the average attendance was only 22, half of the pupils leaving the school to engage in some mechanical or engineering occupations. The school exhibitions, art and mechanical, were held at Horticultural Hall, May 16th to 20th, the closing exercises being held in Horticultural Hall on the latter date.

During the greater part of the year the Mechanical Schools were under the direction of Mr. Charles Williamson, teacher of Mechanical drawing. An extra class in Architectural drawing was organized during the year and modelling in the day classes was discontinued.

No lectures were delivered during the year, the Lecture hall having been rented to Mr. John Baird for the construction of his model of the Centennial Exhibition of 1876, afterwards presented to the city. Mr. Baird permitted the Institute to put it on exhibition for a time and hundreds of people visited the Institute to see it.

The work of the Library was carried on as usual, and appended hereto will be found the table showing attendance, number of books loaned, &c.

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JOHN BAIRD, *President.*

ADDISON B. BURK, *Secretary.*

The Thirty-Ninth annual report records great changes in the official personnel of the Institute.

REPORT OF THE BOARD OF MANAGERS.

To the Members and Stockholders of the Spring Garden Institute :

The year 1889-90 (July 1st, 1889, to June 30th, 1890), has been eventful in the history of the Institute by reason of the changes in the Board of Managers and Officers caused by deaths and resignations. Isaac C. Price, an original member of the Institute and a director for many years, who was elected Vice-President when John Baird was promoted to the Presidency, died in August, and at the September meeting, Addison B. Burk, who had been Secretary since 1878, was elected to fill the vacancy; Mr. M. J. Brown was chosen Secretary to succeed Mr. Burk. Mr. George W. Thompson, who had been a manager from 1878, died in January, 1890, and was soon followed to the grave by Gen. H. G. Sickel, who had been in the Board for a still longer period. During the year Messrs. Charles S. Heller and Charles N. Thorpe, because of inability to attend the meetings, resigned, and Mr. Fred. McOwen resigned as a member of the Board because of his membership therein by virtue of his office of Treasurer, and for a similar reason Mr. M. J. Brown, the new Secretary, also resigned his seat. There were thus six vacancies created in the Board. Five new members were admitted, leaving one vacancy. They were Charles Longstreth, son of one of the Managers, Wilbur Tierney, a former pupil and graduate of the Mechanical Department, Thomas P. Lonsdale, a former teacher, Charles W. Thompson, son of a deceased manager, and Harrison S. Morris.

The day and night schools in drawing and the night schools in mechanical handiwork were maintained and attracted a larger number of pupils than ever before. There were 490 pupils in the night classes for drawing, 78 in the night schools for mechanical handiwork and 52 (some for partial terms), in the day schools for drawing, painting, design, &c., a total of 620 pupils. The art schools remained under the direction of Prof. W. A. Porter; the mechanical schools were re-organized, two former teachers, John Hall and James McCalvey, being re-engaged as teachers of metal and wood working respectively. The object of the schools was carried out with great success, and through the liberality of Mr. George W. Childs the Institute was enabled to give an exhibition of the works of the pupils at Horticultural Hall, where the closing exercises were also held on May 15th. The other important branch of the Institute's work, the Library, was maintained as usual, but did not increase its business. The additions to the Library made in recent years, though valuable, have been in the main technical works and books of reference that do not add to the circulating use of the Library.

The additions made during the year were new drawing desks provided for the north drawing room, storm doors built for the Spring Garden and Broad street entrances and general repairs made, but no great amount of money was expended on the property.

The Lecture Hall was occupied by the Centennial Model.

For the financial statement of the affairs of the Institute which is as favorable as could be expected, reference is made to the report of the Treasurer submitted herewith. The Institute still needs additions to its endowment fund to enable it to carry on its work without dependence upon gifts or solicited help.

During the year \$3,000 of the Bells Gap Equipment Trust Certificates were purchased for the Endowment Fund.

JOHN BAIRD, *President.*
M. J. BROWN, *Secretary.*

PHILADELPHIA, June 30th, 1890.

The Fortieth Annual Report for the year ending June 30th, 1891, recites a year of unusual prosperity. In the preliminary account of "the work and resources of the Institute," which is appended to each Annual Report, a copy of which is hereinbefore quoted from the Thirty-sixth Annual Report, there are one or two changes recorded; arising from the closing of the Day Mechanical School and from the enlargement of the work in other departments.

First, the occupation "in the basement of an apartment for the class in modelling and a large kiln for firing under glaze work." Second, the announcement that as all parts of the building are now used for the work of the Institute, there is no longer any revenue derived from rents.

REPORT OF BOARD OF MANAGERS.

To the Members and Stockholders of the Spring Garden Institute:

The season of 1890-91 was in many respects the most prosperous in the history of the Institute. The schools contained more pupils than ever before, the Library was more largely used than at any time within recent years, being improved by the purchase of many new books, and all the money required to pay expenses was obtained partly through the gifts of liberal friends. This is the only weak point in the Institute's condition. What may be called its fixed revenue falls about \$1,200 to \$1,500 short of its ordinary expenses. Hitherto we have always succeeded in obtaining donations to cover this deficit, but that is an uncertain source of revenue which on occasion may fail us; hence the desirability of increasing the Endowment Fund \$20,000 or more. With the endowment thus increased and continued economical management, the work of the Institute could be carried on with certainty year after year, and donations or other chance revenues be employed to increase the Library and extend the Institute work. Now that we have taken possession of the Hall with the intention of using it exclusively for educational purposes, there are abundant opportunities for an extension of the night schools, in branches allied to drawing and mechanics such as mathematics, engineering, etc.

An examination of the Treasurer's statement will show three principal sources of revenue, the dues of pupils, interest on the Endowment Fund and donations. The interest on the Endowment Fund and the donations were required to pay the general expenses of the entire Institute and the cost of maintaining the Library. With our schools as they are now established, this may be looked for every year, for within reasonable limits, the expenses attached thereto will vary with the receipts from pupils. An increase of one will be met by an increase of the other, and *vice versa*. Last year the receipts from all sources were \$8,109.37, and the expenditure \$8,109.33, an excess of receipts of 4 cents.

The number of pupils in the schools last year was as follows:

Night-Schools, Drawing	574
Night-Schools, Mechanical Handiwork	61
Total Night-Schools	635
Day-Schools, Drawing ..	53
Grand total	688

To this might fairly be added between 500 and 600 pupils who joined the University Extension classes, taking lessons in some special subject, thus swelling the list of persons instructed at the Institute to 1200 or 1300.

The Spring Garden Centre of the Society for the Extension of University Teach-

ing, was organized at the Institute in January, and given the free use of the Lecture Hall.

The Institute gave three free lectures and entertainments on its own account; one by Mr. A. M. Spangler, of the Board of Managers, one by Prof. D. S. Holman, and one by Mr. E. Stirling, of the *Public Ledger*. It is proposed next year to have a fuller course, and also to establish under the Institute auspices, classes in mathematics, etc., taking the place of those established by the Spring Garden Centre.

The Library was considerably improved during the year, \$176.00 having been expended out of the general fund for magazines, papers, binding, etc., and \$170.00 out of the Price Legacy of \$190.00 for the purchase of books. The number of books loaned was 8,363, being more than 1,000 in excess of the usual number, and the number of readers was 18,967, which also shows an increase on all years since 1884-'85.

A considerable sum of money, \$415.92, was expended during the year on repairs and alterations; a part of it in restoring the Lecture Hall to condition for use, and a part in fitting up the Library, basement schools, and Lecture Hall with electric lights. These have been a great improvement, and in two years will save in gas the entire cost of the installation. This result is reached through the liberality of Burnham, Williams & Co., who furnish the current free of cost, in addition to their contributions to meet current expenses.

While congratulating the stockholders and members on the present condition and prospects of the Institute, the President nevertheless again directs attention to the fact that there is still room for an increase of its educational work, and that the safe way of making fresh undertakings possible is to increase the Endowment Fund so that the revenue derived therefrom may cover the general expenses.

JOHN BAIRD, *President*.

MEMBERSHIP.

The membership has remained unchanged since 1887, except for deaths, of which no record has been kept, and the addition of one life member. Irrespective of such losses the membership is: Members in perpetuo, 61; life members, 744; stockholders, 44.

The following official announcement of the various activities of the institute is made for the year 1891-'92.

WORK OF THE SPRING GARDEN INSTITUTE.

(Northeast Cor. of Broad and Spring Garden Sts.)

Library and Free Reading Room (open from 10 a. m. to 10 p. m.).—Books loaned to members. Public admitted to the free use of the books, etc., in the Library and Reading Room. Subscriptions, \$1 per annum.

Lectures and Entertainments.—A course of free entertainments from October to March of each year.

Drawing Schools.—Instruction given in evening classes in Mechanical, Free hand and Architectural Drawing and Modelling. Fee, \$5 per annum.

Day School.—For instruction in Drawing, oil, water color, stained glass and china painting, etc. Fee, \$40 per annum.

Schools in Mechanical Heliwork.—Night classes for teaching the proper handling of tools, vise and machine tool work. Fee, \$5 per annum.

OFFICERS, 1891-'92.

President: JOHN BAIRD, 1705 N. Broad street.

Vice-President: ADDISON B. BURK, 1121 Mt. Vernon street.

Treasurer: FRED MCOWEN, Bullitt Building.

Secretary: M. J. Brown, 1117 Mt. Vernon street.

Board of Managers.—To serve three years, from July, 1889: William H. Crawford, Broad & Spring Garden streets; James H. Windrim, 817 North Broad street; Joel Cook, 849 Broad street; V. E. Archambault, 1316 Spring Garden street; Edward Longstreth, 1805 Spring Garden street; Arthur L. Church, Broad & Spring Garden streets; Chas. Longstreth, 1805 Spring Garden street.

To serve three years, from July, 1890: T. Brown Belfield, 1905 Spring Garden street; E. S. Wills, 1605 Poplar street; B. W. James, M. D., 1719 Green street; John Smethurst, 1241 Ridge avenue; Orlando Crease, 1347 Spring Garden street; John E. Baird, 1705 N. Broad street; John S. Stevens, 130 North 6th street; Chas. Thompson, 1335 Spring Garden street.

To serve three years, from July, 1891: A. M. Spangler, 1015 Mt. Vernon street; Thomas Wood, 2028 Spring Garden street; Henry M. Worrall, 1519 North street; Joseph J. DeKinder, 626 North 11th street; T. W. Tierney, 4300 Wayne street; Thos. P. Lonsdale, S. E. Cor. 4th & Walnut streets; Harrison S. Morris, 207 North 20th street.

STANDING COMMITTEES, 1891-'92.

On library.—Smethurst (chairman), Archambault, C. Thompson, Wood, Burk, DeKinder, Morris.

On lectures.—Spangler (chairman), Burk, McOwen, M. J. Brown, Cook, Belfield, Church.

On property.—Crease (chairman), Charles Thompson, Wills, Worrall, E. Longstreth.

On accounts.—McOwen (chairman), John E. Baird, M. J. Brown.

On drawing schools.—Windrim (chairman), Crawford, Burk, Smethurst, John E. Baird, Lonsdale, Morris.

On mechanical handiwork.—Wood (chairman), Crawford, Worrall, Stevens, Tierney, C. Longstreth, Smethurst.

On law.—Cook (chairman), James.

THE NIGHT CLASSES IN "DRAWING" AND IN "MECHANICAL HANDIWORK."

These classes of the Spring Garden Institute are similar to those of the other institutions here classified.

The Drawing Schools were opened in the autumn of 1878. There is a tradition of "Institute Drawing Classes" at some previous era, but they had, long before, been discontinued and in their place were poorly attended classes for primary English education.

All this was changed in 1878. The Twenty-ninth Annual Report (1879-80) makes no mention of the primary English schools, but thus records the remarkable success of the Drawing Schools in their first season and their increasing success the second winter: "In 1878-79 there were 234 pupils in five classes; this year (1879-80) 358 pupils in eight classes." In this report the difficulty of grading the pupils, owing to their lack of any uniform preparation, is noted, as are the continued efforts to add to facilities.

During the year the schoolrooms were re-furnished with standing desks, and are now in excellent condition. They are exceptionally commodious, well lighted, and

cheerful apartments. The system of charging the pupils a nominal fee by requiring them to join the Institute, has served two good purposes. It has selected for us from among the applicants those who really want to learn, and who, having entered, have a pecuniary interest in attending the sessions of their class; and it has brought in enough money from subscribers to make the schools very nearly self-supporting.

There were four classes in mechanical drawing, with a total of 202 pupils. Three classes in "free hand," with a total of 138 pupils. One class in "architectural" drawing, of 18 pupils. "Whole number of pupils admitted 358, with an average attendance of 211 throughout the six months' term."

A calculation of 8,154 lessons, given at a cost for tuition of \$1,100, gives 13½ cents as cost per lesson.

The Young Men's Institute contributed \$300, and Burnham, Parry, Williams & Co., \$100, in aid of the schools. The residue of cost (amounting in all to \$1,570.70) was paid from the treasury of the Institute, to which the pupils contributed as members about \$800. Lists of distinguished and meritorious scholars are given in this report.

The Thirtieth Annual Report (1880-81) records a very successful session of the drawing schools, with a total of 393, and an average attendance, for the six months, of 271. The cost per lesson given is less than 10 cents.

The classes for Mechanical Drawing, having the advantage of teachers from the Baldwin Locomotive Works and the use of models from the same establishment, have made very great progress, and we are glad to report that the education given the pupils has been of direct value to them in securing them employment, or advancing them in their callings.

The pupils in the Free-hand Classes have also shown by their works that they have been most efficiently instructed by Mr. Wm. A. Porter, to whom much credit is due for his unselfish devotion to the interests of the school. Many of the pupils have been advanced from the elementary work of copying from the "flat" to drawing from the "round," for which purpose the Museum was temporarily fitted up as a model room and a few casts procured to serve as models. The best evidence of the good accomplished during the season is to be found in the works of the pupils themselves, the best of which having become the property of the Institute have been framed, and will be hung up in the class rooms. When it is remembered that pupils are admitted without examination, that many of them are without previous training and have only one night's instruction per week, during six months of the year, the progress made will seem remarkable. It is hoped that hereafter the schools may be given a longer term and the pupils be better supplied with models from which to draw.

The prizes, the founding of which was noted in the preceding historical summary of the Institute, were awarded by committees chosen for that purpose.

The closing exercises of the school were held on the evening of April 5. The lecture hall was hung with the work of the pupils, who with their friends and invited guests crowded the room. The vice-president, Mr. John Baird, presided, and delivered an address,

followed by a report from the secretary, and reports of the committees on prizes.

The venerable president of the American Institute of Architects, Mr. Thomas U. Walter, the former architect of the Capitol at Washington, who was chairman of the committee to award the prizes for architectural drawing, made a verbal report in the course of which "He contrasted the Spring Garden Institute Schools with those he had attended at the Franklin Institute fifty years ago, and said that the pupils of to-day might congratulate themselves on having advantages for study, between which and those that he had enjoyed, there was really no comparison."

The report of the Committee on Free-hand Drawing wisely suggests less dependence upon flat copies.

We are much gratified to find that the drawings, as a whole, were of a much higher grade than we had anticipated; many of the pupils showing a talent and ability, that, with an industrious pursuit of their study, will, soon admit them to higher schools of art.

As we understand that the intention of this school is to give the pupils such a knowledge of drawing as will be of benefit to them in their business pursuits (an idea that is most excellent, and will be of incalculable benefit to them in after life), we would suggest that more attention be paid to the drawing from a model, models of all kinds, shafting pulleys, bits of machinery, plaster casts or any manufactured article.

A pupil may become very expert at copying from a flat, and yet when called on to make a drawing from an object, would utterly fail.

We feel that there is a great need in this city for these Preparatory Schools for Free-hand Drawing, and hope that our citizens will awake to the fact and liberally support all schools that may be in progress, or formed, with legitimate ends in view.

The Committee on "Mechanical Drawings" define the term as follows:

In our estimation a mechanical drawing is a correct representation on paper of the draughtsman's design, by which the artisan is enabled to carry that design into effect and build the machine. It should therefore be as clear and distinct as possible; the lines should be neatly but clearly drawn; the figures should be plain. It should be borne in mind that the figures are among the most essential parts of a good drawing, and are capable of making or marring, as the case may be. Last, but not least, attention should be paid to the arrow points, which mark distance lines, they should be carefully and correctly drawn, and not put on at random, as is often the case.

In making the award we have endeavored to select those drawings which were the best practical illustrations of what a mechanical drawing should be, and we trust that our decision will meet with your approval.

Before closing our report we feel it our duty and a pleasure to compliment the teachers on the manner in which they have carried on the course of instruction and on the progress shown by the students.

The following extracts from the Thirty-first Annual Report (1881-82) show the continuing progress of the school and also, that the committee in charge, are in earnest in their endeavors to constantly improve the training of the school.

THE DRAWING SCHOOLS.

Prior to the year 1881-'82, the pupils in the Free hand drawing classes paid two dollars (for minors) or three dollars (for adults) per annum as "Junior" or "Annual" subscribers, which payment entitled them to admission to the schools for one night per week. At the same time pupils in the Mechanical and Architectural classes for the same payment were permitted to attend two evenings per week. The rates were insufficient to pay the actual cost of tuition, but the Board of Managers did not desire to increase them, preferring if possible to make the cost of instruction to the pupils merely nominal. It was resolved, however, to make the privileges uniform in all the classes, the payment of the fee giving the right to attend one night per week, and to permit such students as desired to do so, to attend two nights upon payment of a double fee. A very large proportion of the pupils, particularly in the Mechanical classes, availed themselves of this privilege, and the progress made by them in comparison with that of pupils who attended only one night per week, was so marked, that it has been determined to hereafter require all pupils to attend two nights per week, and pay the double fee. This is rendered necessary, moreover, by the fact that in these classes general as well as individual instruction is given, and this cannot be done successfully with mixed classes of pupils, some of whom attend one night per week and others two.

Notwithstanding the increased facilities for instruction given by the improvements made to the building, the applications for admission to the drawing schools far exceeded the capacity of the rooms. The pressure was indeed so great that more pupils were admitted, perhaps, than was consistent with the attainment of the best results. But in all night schools the average attendance is considerably less than the number on the rolls, and the committee desired to extend the privileges of the Institute to as large a number of pupils as could possibly be accommodated. * * * * The whole number of *individuals* in the drawing schools (night classes) was 458. * * *

It is hoped that in future years, an increased endowment fund will enable the committee to employ a larger number of instructors of the several classes, thus permitting the principal teachers to deliver brief lectures to the classes on perspective, the principles of composition and of design, harmony of color and similar subjects, while the classes are in session for practice.

Through the kindness of the Directors of the Academy of the Fine Arts, a number of casts from the Antique were obtained for the use of the school in Free hand drawing, which, with purchases of a small number of models, and a large assortment of flat copies gave the schools a better equipment than they have heretofore had, though by no means what is needed. The facilities for drawing from the round ought to be increased, and this can best be done by an increase of the number of casts for elementary drawing. The want of these has been seriously felt, many of the pupils being compelled to advance at once from the flat copy to drawing from busts and full figures, a branch of work for which they ought to have long training with simpler subjects. Notwithstanding this drawback, however, a good advance has been made on last year's work, and many of the pupils have been promoted to drawing from the round, in which practice they are likely to acquire the best training for eye and hand.

An attempt has also been made to develop a taste for, and to teach the principles of original design, and that it has met with some success is shown by the works of a few of the pupils, who, taking a plant and its several parts, have constructed therefrom, by conventional treatment, original and highly decorative designs. This is a branch of work that should be developed, since it opens the door to lucrative employment for such pupils as may have a natural aptitude for invention, and skill in putting their thoughts on paper.

The Mechanical and Architectural Drawing Classes being more strictly confined to rules, afford less opportunity for original work, but both of these classes have furnished for the exhibition some designs made under limitations. The exhibits of these classes, and particularly the mechanical, do not appeal to the sense of the beautiful, and can therefore be fairly judged only by those who are familiar alike with the purpose of the drawings, and the difficulties that beset a draughtsman, but to such as are qualified to judge, the practical drawings of the pupils will be no less interesting than the works of art, which all can admire.

The circular for the season of 1882-'83, announces improved desks and additions to the stock of models, etc.; no preparation is required for entrance, but pupils will be graded according to their advancement and promoted from time to time after examination.

The change referred to in the last report was announced, the notice being that minors pay \$4 for term of six months, and adults \$6, which fees include all the privileges of the Institute. These classes are thus referred to in the Thirty-second Annual Report (1882-'83).

On the third floor are three large rooms for drawing classes, all of them occupied at night for six months in the year by classes in Freehand, Mechanical, or Architectural Drawing. The capacity of the school rooms is about 150 pupils per night, each pupil attends two nights per week, thus allowing instruction to be given to 450 pupils. * * *

The object has been to make all the night-classes as nearly free as it is desirable to make them; and thus to extend the benefits of the Institute to the largest possible number of pupils; but to make sure that this object can be attained without requiring the managers to make constant appeals to the public for help, it is necessary that the Institute should have an endowment fund of \$50,000. * * *

The teachers in the several schools are practical draughtsmen and workmen, employed during the day in large industrial establishments, and the managers themselves devote a great deal of time to the practical work in all departments of the Institute.

* * * * *

THE DRAWING SCHOOLS.

Our Drawing Schools last year were very largely attended and good progress was made by the pupils, the course of study having been systematized and the pupils carefully graded. The number of applicants in the night classes exceed the capacity of the school, and learning of this, Burnham, Parry, Williams & Co. offered us \$400, the equivalent for the rent of a room on the first floor, heretofore occupied by the Young Men's Hebrew Association, if we could take possession and organize new classes in mechanical drawing. This will probably be done, making room for about one hundred and fifty additional pupils, besides giving the Institute a useful room for lectures to pupils in all the different branches of the school work. * * *

At the close of the school term, an exhibition was given of the work of the pupils in the several departments, which was largely attended, and excited surprise and high praise, not only from the general public, but from the judges called to pass upon the works of the pupils. The prizes were awarded on the evening of Friday, April 20th. The reports of the judges give a disinterested view of the work of the school, and they are printed in the appendix.

The prizes awarded were very valuable: Hagstoz & Thorp contributed a gold watch for the best Original Design for Industrial Use; Messrs. John Baird, George W. Childs, Burnham, Parry, Williams & Co., Gen. H. G. Sickel, John Smethurst, James H. Windrim, and Prof. W. A. Porter also contributed to the prizes for the Drawing Schools.

The Reports of the Judges in each of the kinds of drawings note the marked improvement in the work of the pupils.

The following statement of the Night Classes is from the "Prospectus of Schools of the Spring Garden Institute, season of 1883-'84."

THE NIGHT SCHOOLS.

The Night Schools in Drawing are entirely distinct from the day classes, and are intended for the education of young men and women who have no leisure during the day, and for those who have had no previous instruction. The course of study is particularly adapted for mechanics and others who require a practical training. Instruction is given in Mechanical, Architectural, and Freehand Drawing. Mechanical Drawing is taught by practical draughtsmen in large machine shops; Architectural Drawing by a practical architect, and Freehand Drawing by designers under the direction of Prof. Porter. The fees for instruction in the Night Classes are merely nominal. Each class meets two evenings per week; and there are accommodations for about five hundred pupils. The demands upon the Institute for this kind of instruction are so great, that application for admission should be made early. The fees are Four Dollars for minors, or Six Dollars for adults for a term of six months, and these fees admit to all the privileges of the Institute, including the use of the Library for the whole year. Holders of Prize Cards are entitled to free admission: but they must enter their names as students, with other applicants, to secure seats.

Night Classes.—October 1st to April 4th. Fees, \$4 per term for Minors. Fees, \$6 per term for Adults. Two Lessons per Week, 7½ until 9½ P. M.

EXHIBITIONS.

At the close of the Night School term in April, a public exhibition of the works of pupils is held, and prizes that may be offered, by friends of the school, are awarded. The prize drawings are also kept on exhibition during the year, and the public is invited to an examination of these and other work of the pupils, at any time during the sessions of the school.

These classes are under the direction of the "Committee on Schools of Design and Drawing."

The following are members of this committee for 1883-'84.

Committee on Schools of Design and Drawing.—JAMES H. WINDRIM, *Chairman*, Wm. H. Crawford, W. L. Austin, John Smethurst, Charles N. Thorpe, John E. Baird, Addison B. Burk.

The committee attend at the Institute three consecutive evenings in September, from 8 to 10 P. M., to receive applications for admission to the "Night Classes on Drawing."

A note from the chairman of the committee under date of October 8, 1883, gives the numbers then in attendance on the night schools as follows:

In Mechanical Drawing (pupils in 5 classes)	240
In Freehand Drawing (pupils in 3 classes)	210
In Architectural Drawing (pupils in 1 class)	56
Total	506

Of the scholars attending the night schools, 50 are females. The average age is about 18 years, though those attending range from fourteen to forty years of age.

In the report for 1883-'84 by Mr. William A. Porter, Principal of the Art Department, which includes all the day and night Drawing Schools, as well as the classes in painting, modelling, and Life, is the following sentence relating to the Night Drawing Classes:

The numbered classes meet at night, Nos. 1, 2, and 3 being primary classes drawing chiefly from the flat, and Nos. 4, 5, and 6 being composed of pupils sufficiently advanced to draw from the cast, and to make original designs. * * * The studies in this Department have been systematized, and the classification of pupils, though not as perfect as could be desired, has greatly helped the work of instruction. Time examinations are held to test the proficiency of the pupils and they are also examined in such studies as geometry and perspective. For their averages thus obtained, (independent of the drawings they may make by way of practice,) they receive certificates showing their grade.

The reports by those directly in charge of these classes follow:

MECHANICAL DRAWING.

PHILADELPHIA, April 16, 1884.

To the Committee on Drawing:

GENTLEMEN:—I beg to submit to you the following report of the night classes in Mechanical Drawing for the term ending April 4th, 1884:

Attendance.

Class.	No. enrolled.	Average attendance.	Attendance.
			<i>Per cent.</i>
No. 1	40	28	70
No. 2	52	34	65.4
No. 3	52	36.6	70.3
No. 4	52	27	52
No. 5	52	34	65.4

The Institute prizes and class honors have been awarded as shown in the appendix.

There have been many more pupils enrolled for mechanical drawing this year than ever before.

The teachers have worked together, and an effort has been made to grade the pupils.

This attempt was successful in all the classes except No. 2, where some advanced men were forced to attend with the beginners, because they had other engagements on the regular nights.

This arrangement reduced the number of pupils in the advanced class (No. 1) to 40, and it was deemed advisable to keep this class at that number rather than interfere with the uniformity of the instruction.

It will be noticed that the average attendance in class No. 4 is much lower than in any other class. This is accounted for by the fact, that the class was obliged to change teachers in the middle of the term.

WM. H. MILLER,

Supt. Night Schools in Mechanical Drawing.

ARCHITECTURAL DRAWING.

To the Committee on Drawing:

GENTLEMEN: The number of pupils enrolled in this class at the beginning of the term was 54. The average attendance during the first three months was 40, and for the second three months 30; general average, 35; per cent. of attendance, 65.

T. A. LONSDALE, *Teacher*.

CLOSING EXERCISES OF THE SCHOOLS.

From April 21st to 26th inclusive, a public exhibition of the works of pupils in all departments was given, which was largely attended, and on April 28th prizes were awarded in accordance with the decisions of the judges as printed in the appendix. These prizes included a gold watch presented by C. N. Thorpe & Co. for the best original design, several free scholarships, and a great variety of useful tools, &c., with books on art and mechanics.

The following gentlemen contributed the prizes thus given to the pupils:

Free-Hand Drawing.—Geo. W. Childs, C. N. Thorpe & Co., John Baird, Queen & Co., Janentzky & Weber, and W. A. Porter.

Mechanical Drawing.—John E. Baird; Burnham, Parry, Williams & Co., George Wood.

Architectural Drawing.—James H. Windrim.

The following is the report by the Committee to award the prizes in the classes for Mechanical Drawing, numbering 248 pupils in all; and in the class of Architectural Drawing, comprising 54 pupils.

MECHANICAL DRAWING.

PHILADELPHIA, April 19th, 1884.

To the Committee on Drawing:

GENTLEMEN: Having carefully examined the mechanical drawings of the various night classes in this branch, we make the following awards of the prizes to be distributed among these pupils:

	Class No.		Class No.
1st Prize, Geo. Hart	2	8th Prize, H. Linwood De Haas.....	3
2nd Prize, Wm. Kolb.....	1	9th Prize, Richard Paxson	3
3rd Prize, Joseph Weiss	1	10th Prize, J. W. Curtis	5
4th Prize, H. M. Hatcher	2	11th Prize, R. Elmer Tomlin	5
5th Prize, W. C. Furber	4	12th Prize, C. H. Bender.....	4
6th Prize, C. Hampton.....	2	13th Prize, Wm. H. Schalliol.....	4
7th Prize, Albert C. Smith	5	14th Prize, John Bennett	3

We are pleased to note the advancement made in the general quality of these drawings over those of last season, also that it has been possible to adopt a better-graded and more systematic course of instruction.

Top much importance can hardly be attached to the observance of conventional rules in tinting and cross hatching, since these form so important a part in the language of this class of drawing.

For the purpose of securing uniformity of finish some of the advanced schools teaching mechanical drawing have arranged an exercise for their pupils for giving handiness with the right line and bow pens before commencing composition, and this practice we would recommend to the drawing schools of the Institute.

Very respectfully,

ROBT. CRAWFORD.
M. G. WILDER.
R. H. SANFORD.

ARCHITECTURAL DRAWING.

PHILADELPHIA, April 21, 1884.

To the Committee on Drawing:

GENTLEMEN: We have examined carefully all drawings submitted to us, and have, at the same time, taken into consideration the information, kindly furnished by you, of the attendance and attention of each pupil, also the number of terms of instruction. We award:

- 1st Prize, J. B. Colesberry.
- 2d Prize, David A. Woolpper, jr.
- 1st Scholarship, Samuel Roberts.
- 2d Scholarship, H. H. Hudson.
- 3d Scholarship, B. R. Stevens.

We take pleasure in making special mention of meritorious work submitted by Guy King.

R. G. KENNEDY,
EDWARD HAZLEHURST,
Committee.

For the succeeding year 1884-'85, Mr. Porter, the Principal of the Art Department, reports in the night classes an enrollment of 227 pupils in free-hand drawing, divided in five classes, and 160 pupils in mechanical drawing, divided in four classes, with 48 in architectural classes.

The average attendance is slightly better than last year. This fact, together with an increase in the number of pupils entered in the free-hand classes, is most gratifying. There is also a much greater earnestness with the work to be noted, and so far as I am able to judge, I do not think we have a single pupil that attends for amusement only. The year's work I think will be an advance upon that of last season, though we have lost (in a most desirable way) some of our advanced students, they having obtained positions in various parts of the country. * * *

The Wednesday evening lectures on Geometry and Perspective have been well attended, being full during the entire season. * * *

The usual time examinations will be held before the close of the term, the result of which will be made known at the closing exercises of the school.

The average attendance in the Architectural Class during the first half term was 34 pupils; during the second half has been reduced to 24 pupils. I can only account for the limited percentage by the fact that most of the pupils this season being working carpenters have been compelled to seek employment out of the city, and hence have not had the opportunity to attend.

It gives me great pleasure to report that the order in the whole school has been perfect.

The next Annual Report, the 35th, comprises the period extending to June 30th, 1886, to which date the time of holding the annual meeting has been changed; the reasons for which have already been given in the previous account of the Institute. Professor Porter remains in charge of the Art Department, and Mr. William Harfeker has been appointed as his assistant both in the day and night schools. Public exhibitions of the work of scholars were made in April, 1885, and in May, 1886, attracting much attention from the public and the press. Medals were awarded to the pupils, and to graduates who had attended a full course were given diplomas.

It will be seen that the statistics given by Mr. Porter at this time do not distinguish between the day art pupils and the night pupils.

THE DRAWING SCHOOLS.

The following reports of teachers give full information respecting our schools:

ART DEPARTMENT.

To the Committee on Drawing Schools:

GENTLEMEN:—I beg to offer the following Report of the classes under my charge. The whole number of pupils entered in the Art Department was as follows: Free-hand Drawing, Painting, Modeling, and Wood Carving, 372; Architectural, 43; Mechanical Drawing, 95; total, 510.

The attendance in the mechanical drawing classes has been less this year than heretofore, entirely due, I believe, to the shortness of work in the various industrial establishments of the city. Many of the former pupils have informed me of their inability to pay the fee in consequence of having to work on short time. The other classes have been full, equaling in numbers those of previous years, and the average daily attendance, except in the architectural class, has been excellent during the entire season. This certainly shows an earnestness in the pupils and a thorough appreciation of the advantages offered them, coupled with an enjoyment of the many improvements made by the Board of Managers for their comfort and convenience.

The Wednesday evening lectures on geometry and perspective were given with but one intermission during the whole term, and were largely attended.

The usual time examinations have been held, and with very satisfactory results. The number of pupils passing excellent in free-hand drawing being 35; good, 27; and satisfactory, 18; most of these being new scholars. For Model Drawing—excellent, good and satisfactory, 19 have passed. This is, also, a very good average, the work being of a more severe kind. For Geometry, 17 passed excellent and 2 satisfactory; for Perspective, 5 passed excellent, 1 good and 4 satisfactory. Quite a number of pupils who have attended the lectures on the two last named subjects failed to come up for examination, the ordeal being still more severe, and a number of pupils failed to pass, though making almost pardonable errors, but the faculty being quite determined that honors obtained shall be fairly won, cannot pass over an error however slight.

It is again my pleasure to report that the order in the school during the whole season has been excellent.

WM. A. PORTER,
Principal Art Department.

The usual exhibition of scholars' work was given, and the prizes and diplomas awarded in April, 1885.

At the closing exercises in May, 1886, at the distribution of prizes and diplomas, Mr. John Baird presided and Professor James MacAlister, Superintendent of the public schools of Philadelphia, delivered an address on "Art and Mechanical Education." In this address the speaker traced the rapid development in the United States of this new phase of technical training, which he pronounced to have resulted from the influence of the Centennial Exhibition, held in Philadelphia in 1876. Addresses to the graduates were delivered by Mr. Porter, principal of the Art Department; and by Mr. Addison

B. Burk, secretary of the Institute. The Public Ledger of June 2, 1886, reported the exercises on this occasion and printed the long lists of pupils to whom prizes and diplomas were awarded. These lists, also given in the Annual Report of the Institute, furnish an additional stimulus to incite the students to their best endeavors.

In the very brief report of the principal of the Art Department for the year ending June 30, 1887, the number of pupils in the several divisions are given. These show an increase in mechanical drawing classes over the previous year, with some decrease in the total number attending his department.

THE DRAWING SCHOOLS.

The Drawing Schools were well attended and highly successful. The number of pupils entered in the Art Department was 475, of whom 37 were in the day classes and 438 in the night classes. The latter were divided as follows: Free-hand Drawing and Modeling, 245; Mechanical Drawing, 143; Architectural Drawing, 50; total, 438. The usual time examinations were held and with very satisfactory results. In Outline Drawing, by the younger pupils, 6 were marked excellent, 17 good and 21 satisfactory. In Model Drawing 7 were marked excellent, 1 good, and 5 satisfactory. In Geometry 12 were marked excellent and 1 satisfactory; and in Perspective 16 excellent, and 2 good.

WM. A. PORTER,
Principal Art Department.

The Thirty-Seventh Annual Report for the year ending June 30th 1888 contains the following brief summary of the number of pupils in attendance on the Drawing classes.

There were 449 pupils in the night schools for drawing during the year, of whom 228 were entered in the free-hand drawing classes, (including modelling,) 163 in the mechanical drawing classes, and 58 in the architectural classes. Separate exhibitions were given of the works of the night and day-classes. That by the night-classes was held from April 16th to 19th, the closing exercises being held on the 20th. The day-schools had their exhibition from June 11th to June 14th, the closing exercises being held on June 15th.

The names of the four graduates of the Art Department and of the prize winners in the several Day and Night classes, are given. The Public Ledger of April 17th and June 16th, 1888, contained notices both of the exhibition of pupils work in the night schools, by themselves, consisting of some "five hundred drawings and more than a hundred specimens of work in wood and metals;" and a later, like exhibition of the work of pupils in the day classes; both in the "School of Art and Design," and in the "Mechanical Handiwork Schools." The art classes showing several hundred drawings and paintings with specimens of original designs for manufactures, and also "a fine display of china decoration, done by female pupils and fired in the Institute's kilns." The pupils of the Day Mechanical Handiwork Schools made an interesting display consisting of mechanical drawings and of many varieties of objects in metal work;

and, also, a series showing all of the processes of machine working in course, comprising the sketch, scale drawing, wooden pattern, rough casting, and the finished machine.

The following brief notice of the schools is given in the Thirty-Eighth Annual Report for the year ending June 30th 1889.

THE DRAWING SCHOOLS.

There were 677 pupils in the schools during the year. Of these 516 belonged to the Art Department, 482 in the night classes and 34 in the day classes. In the Mechanical Department there were 161 pupils, 76 being in the night classes. During the week of May 6th, an exhibition of the works of pupils was given at Horticultural Hall, when the following prizes were awarded :

The list follows of the many prize winners in the different schools and classes. As the closing of the Day Mechanical Schools at the end of the year, owing to the opening of other similar facilities and the probable withdrawal of many pupils is announced, the following extracts from the Treasurer's report for the year for 1889-1890, are given, showing the receipts and disbursements in connection with the schools.

RECEIPTS.

From Drawing Schools.

Fee of pupils :	
Day classes	\$1,265.00
Night classes	2,330.00
	<hr/>
	3,595.00

From Mechanical Schools.

Fee of pupils :	
Day classes	\$4,017.65
Night classes	380.00
	<hr/>
	4,397.65

DISBURSEMENTS.

Drawing Schools.

Teachers' salaries	\$3,715.00
Supplies	72.18
	<hr/>
	3,787.18

Mechanical Schools.

Teachers' salaries	\$3,845.00
Supplies.	390.34
	<hr/>
	4,235.34

The Thirty-Ninth Annual Report for the year ending June 30th 1890, contains the following brief summary of attendance in the schools, with the usual list of the names of graduates and prize winners among the pupils.

DRAWING AND MECHANICAL SCHOOLS.

The drawing schools during the season of 1889-90 had more pupils than ever before, the total reaching 618. Of these 490 were in the night schools for drawing, 50 in the day-schools for art instruction and 78 in the night schools for Mechanical Handiwork. An exhibition of the works of pupils was given at Horticultural Hall during the week of May 12th, and was very largely attended.

The following extract from the Treasurer's report shows the falling off in receipts and expenditures, owing to the closing of the Day Schools of Mechanical Handiwork.

RECEIPTS.

From Drawing Schools.

Fees of pupils:	
Day classes.....	\$1,584.00
Night classes.....	2,445.00
	<hr/>
	4,029.00

From Mechanical Schools.

Fees of pupils:	
Day classes, 1889.....	\$95.00
Night classes, 1889-'90.....	395.00
	<hr/>
	490.00

DISBURSEMENTS.

Drawing Schools.

Teachers' salaries.....	\$4,006.00
Supplies.....	312.81
	<hr/>
	4,318.81

Mechanical Schools—Night.

Teachers' salaries.....	\$608.00
Supplies.....	122.99
	<hr/>
	730.99

The Fortieth Annual Report (1890-1891) contains the following summary of attendance in the schools :

DRAWING AND MECHANICAL SCHOOLS.

The Drawing and Mechanical Schools, during the season of 1889-'90, had more pupils than ever before, the total reaching 688. Of these, 574 were in the night schools for drawing, 53 in the day schools for Art instruction, and 61 in the night schools for Mechanical Handiwork.

An exhibition of the works of pupils was given in the hall of the Institute during the week of May 18th, and was very largely attended. Closing exercises were held on the night of May 22nd. The President of the Institute, Mr. John Baird, presided, and the exercises included addresses by Addison B. Burk, Vice-President ; Director of Public Works, James H. Windrim and Joel Cook, Directors, and Professor W. A. Porter ; the distribution of prizes by Michael J. Brown, Secretary, and vocal music by the Temple Quartette.

The following gentlemen compose the Committee on Schools of Drawing and Design for the school year 1891-'92.

James H. Windrim, (Chairman) William H. Crawford, Addison B. Burk, John Smethurst, John E. Baird, Thomas P. Lonsdale, Harrison S. Morris.

While the particular accounts of the several special departments of the Institute are given in connection with those of similar schools, further interesting reference to them will be found in the extracts from the annual report of the board of managers given in the pages immediately preceding.

The report of a recent exhibition of the work of both the art and mechanical schools is also quoted from the Thirty-Sixth Annual Report in the previous general account of the Institute. The methods of reporting the several schools and classes of the Institute vary greatly in the different Annual Reports, as to the space given and in the attention to details, which must explain similar diversities in the accounts here given. While it is desirable to group classes of schools and institutions together, it is also very desirable to avoid repetition, though this has not been possible in all cases.

THE NIGHT CLASSES IN MECHANICAL HANDIWORK.

The movement towards definite instruction in the use of tools, to which reference has been made as so generally manifested throughout the country, very appropriately showed itself here, in this "Institute" specifically designed for the instruction of young mechanics; and it is interesting to see how speedily the little beginning of a night class, developed a fully equipped, well organized, technical institution of Manual Training, ranking, as we shall presently see, with the Boston and St. Louis Schools of Mechanic Arts. In a like manner the night drawing classes of the Institute have resulted in the development of a day Art School, of which an account is elsewhere given with its kindred schools; thus, the diverse tendencies referred to in the instances of the Boston institutions; towards technical mechanics on the one hand and towards the fine arts on the other, are found clearly developed in this single "Institute."

The first notice of these "Mechanical Handiwork" classes appears in the Twenty-ninth Annual Report (1879-'80), where, in the general report, they are thus spoken of:

Schools of Mechanical Handiwork.—These were organized so late in the season that they have had little opportunity for development, but there is every reason to believe that they will become one of the most useful branches of the work of the Institute. They were organized as an experiment, and, like the Drawing Schools, proved more popular than the most sanguine had expected. The number of pupils entered in the classes first organized (for filing and chipping) was really limited only by the capacity of the schools. These classes are wholly self supporting, that is to say, the fees of the pupils cover the expenses of tuition, but the Institute bears the expense of lighting and, for the present at least, the cost of fitting up work-benches and supplying tools. There is every prospect that these schools will soon occupy

all the available space on the third floor, and with the Drawing Schools prove very useful educators of young mechanics. Besides the pupils themselves, many manufacturers, master mechanics, etc., have taken a great interest in these Technical Schools, and the Institute has received valuable gifts of tools, etc., in aid of the enterprise.

The committee in charge of the School, a special committee of seven members—the committee in charge of the Drawing Schools that year, had but three members—made the following detailed report :

SCHOOL OF MECHANICAL HANDIWORK.

Early in the fall the desirability of having schools in mechanical handiwork, where young men and boys could learn the use of tools, the properties of materials, etc., led the Board to start a school experimentally on a plan suggested by Dr. Robert Grimshaw.

The broad corridor on the third floor leading to the northern drawing room was fitted up with work benches, gas fixtures, etc., so as to furnish accommodations for ten pupils in each class. It was originally the intention to have three classes, meeting two evenings each week, but the applications for admission were more numerous than had been anticipated and eventually five classes were organized. The first class was organized January 26th, for a course lasting ten weeks, and the others began work in rapid succession until fifty-seven applications had been received and forty-two admitted to the classes. Each pupil paid a tuition fee of \$5 for the term, and the Institute engaged to supply work benches, tools, material for practice, etc. Mr. John Hall was engaged to give practical instruction to the pupils. The school proved highly successful, and so manifestly useful that an effort will be made to enlarge the scope of the work, and provide greater accommodations for pupils.

The school appears to meet a public want, and several manufacturing firms have most kindly aided in the work of establishing it by presents of tools, etc., and by aiding in fitting up the work-shop. Chipping and filing were the only branches of work attempted during this experimental course, but it is hoped that in future years all branches of mechanical handiwork may be taught at the Institute.

The average age of the forty-two pupils admitted to the school was 19 years and a fraction, but a large majority of them were boys under sixteen. Their occupations were as follows: attending school, 16; clerks, 5; machinists, 4; cashier, cigar-maker, china business, decorator, engineer, milk dealer, grocer, iron molder, painter, paper hanger, printer, real estate agent, stenographer, and watch-case maker one each.

The whole expense of fitting up, furnishing, and carrying on the school was about \$485. The pupils contributed about \$210 in fees. Gifts of tools, materials, labor, etc., amounting in value to nearly \$150, were received, and Mr. H. G. Sickel, of the committee, contributed \$50 in cash to be used next fall in establishing free scholarships.

The next notice of these classes is given in the Thirtieth Annual Report (1880-'81) in the account of the distribution of prizes, etc., at the close of the year.

MECHANICAL HANDIWORK CLASSES.

The closing exercises of the Mechanical Classes were held on the same evening, and the works of the pupils were exhibited. The report of the Committee on Schools presents the results of the year's work as follows :

"The classes in Mechanical Handiwork of the Institute for the term closing this

evening contained 30 pupils, their ages ranging from 13 to 38, the average being 21 years.

Their occupations are as follows: Clerks, 7; school, 7; iron foundry, 3; machinists, 3; engineer, printer, plate printer, salesman, sewing machines, auger polisher, loom fixer, errand boy, carpenter, storekeeper, each one."

A list of pupils receiving prizes and honorable mention is given. The report then proceeds:

As evidence of the importance of this branch of the Institute's work, it is but proper to mention that from two large manufactories of our city applications have been received for young men having a knowledge of the proper handling of bench tools; and it is with pleasure we report that the positions have been filled satisfactorily, we understand, both to employers and employes, by three pupils from these classes. In fact, the demand from our workshops for such educated labor is greater than we can at present supply. * * *

The classes were most efficiently taught by Mr. T. Mason Mitchell, who delivered Wednesday evening lectures to the pupils and was zealous in teaching them the practical use of tools. The expenditures on account of the schools amounted to \$246.17. The receipts were \$150 from fees of pupils and \$38.17 from Weaver & Pennock. Total \$188.37. This, with the fifty dollars contributed by Gen. Sickel last year, but not then used, makes \$238.37, or within eight dollars of the expenditure.

The next year was one of unusual activity and development in all departments of the Institute, as has already been recorded. In arranging for a proposed enlargement of the quarters for the Drawing classes—

It became necessary either to abandon the school of Mechanical Handiwork or to find new quarters for it, and, as a measure of economy while the workmen were in the building, three of the apartments in the cellar were plastered, floored with cement, provided with a good entrance, and otherwise fitted up for possible use by the school in Mechanical Handiwork. * * *

The removal of the Mechanical Handiwork schools to the basement, where there was ample room for work, benches, and machine tools, also impelled the equipment of these schools with a very expensive plant.

Under the head of "Mechanical Handiwork," the history of the settling the schools in their new quarters is detailed as follows:

MECHANICAL HANDIWORK.

The experiments in the teaching of Mechanical Handiwork, limited as they were to filing, convinced the Board that this was a useful field of labor; but there was no part of the building suitable for carrying on other mechanical work until, during the alterations to the building, a new entrance was made to the basement, and the cellars were plastered and floored with cement. It was then determined to establish the school in the rooms thus made, and the work of fitting them for the use of classes was at once begun. Circumstances beyond our control caused much delay, however, and the school was not opened until November 7th, and then nothing could be done but chipping and filing, for the gas engine and some of the tools had not been delivered. The tuition fee was fixed at \$5 for two evenings per week for a term of three months. The class was soon filled, and additions had to be made to the number of work benches and vises. The pressure became so great that all our energies had to be devoted to the school work itself, and tools and materials purchased on credit, leaving the collection of money to pay the heavy expenses incurred until a more favorable season. The machine tools were not put to work until a few days before the opening of the second term (February 7th), but the pupils advanced

rapidly in their knowledge of tools and materials and in manual dexterity, and in spite of all drawbacks have made a very creditable showing. Besides the specimens of chipping and filing the finished squares, etc., that some have produced, a small steam engine has been finished by the pupils, and considerable work done on two other engines and on a large sixteen-inch lathe intended for the use of the schools. A very large number of pupils are machinists or employés in machine shops, who, in the absence of such instruction as was afforded to apprentices under the old system, seek our school as the best place in which to acquire a broad knowledge of the trade at which they work and special skill in the handling of tools.

Of the 158 pupils who have attended the classes during the past winter, 37 are machinists, 29 from schools; 9 clerks; 5 druggists; 5 errand boys; 5 engineers; 5 from dry goods stores; 4 iron foundries; 4 watchmakers; 3 carpenters; 3 draughtsmen; 3 instrument makers; 3 blacksmiths; 2 metal workers; 2 laborers; 2 carters; 2 photographers; 2 file cutters; 2 book binders, and one each as follows, viz., conveyancing, tinsmith, printer, tea store, spinner, pattern maker, sewing machines, turner, milkman, wire worker, chemist, butcher, upholsterer, white goods, axle works, and lumber business.

This return is very significant. Very nearly one-half of the entered pupils are young men engaged during the day in mechanical employment where they feel the need of such instruction as the school affords. They do not come for idle amusement, but to work, and they *pay for the privilege* out of their own pockets, demonstrating alike their good sense and the failure of shop practice, as it exists to-day, to meet the needs of learners.

The number of pupils entered for the first term of three months was 96, and for the second term 62. The cost of the plant was as follows:

Gas engine	\$920.27
Planer	600.00
Lathe	185.00
Drill press.....	125.00
Forge and tools.....	45.85
Files and other tools	532.70
Benches, vises, etc.....	259.46
	<hr/>
	2,538.30

In the Thirty-second Annual Report (1882-'83), the fact is recorded that—

The Mechanical Handiwork Department was greatly developed by Lieut. Robert Crawford, of the U.S. Navy, who was detailed by President Arthur to superintend the instruction given in that department. A pattern shop was provided with tools through the liberality of Mr. James S. Whitney, who contributed \$500 for that special purpose, and many new and costly tools were added to the plant.

In the report of the committee of the same year the work of the night classes and the day school in this department is not discriminated and, as this was the first establishment of the day school, this special report will be given in the account of that school.

The Institute issued a "Prospectus" of its schools for 1883-'84, in a handsome little pamphlet of 24 pages. The following is that part of it given to the

NIGHT CLASSES IN MECHANICAL HANDIWORK (SESSION FROM 7½ TO 9½ O'CLOCK).

Course in Metal.—This consists in chipping and filing to line; production of true surface; tool dressing and tempering; laying off work; fitting up work; turning, planing, screw-cutting, boring, drilling, etc.

Course in Wood Working.—In this branch are comprised carpentry, wood-turning, pattern-making, and elements of molding.

The object of the Night Schools is to supply mechanical instruction to those who desire it, but who cannot attend the day classes; but especially are they intended to assist apprentices and others employed in shops and manufactories. A weekly lecture will be given explaining the use of tools, their construction and care.

DISCIPLINE OF THE NIGHT SCHOOLS.

Prompt and regular attendance is required, and the closest attention to instruction.

Where parents or guardians of pupils desire it, delinquencies will be promptly reported to them.

Pupils are at no expense beyond the regular tuition fee, except for working-apron.

No operations have to be performed requiring great outlay of physical strength, such as would render the instruction onerous, nor are they in any degree dangerous or injurious to person or clothing.

The shops are dry, well ventilated, and well lighted.

A lavatory is provided for the convenience of the pupils.

EXPENSES.

Students will furnish their own text books where required by the curriculum; also drawing instruments and paper. Drawing boards and T squares are furnished by the school.

Night students, Mech. Handiwork.....	\$5 per quarter.
For course of Six Lectures in Steam Engineering	3 “
For course of Ten Lectures in Steam Engineering	5 “

The tuition fees are so arranged that a student may discontinue his studies at the end of a quarter, should he find it necessary to do so, without pecuniary loss to himself or to the Institute.

APPLICATIONS FOR ADMISSION.

Applications for admission to any of the classes may be made to Lieut. Robert Crawford, U. S. N., in charge of the Technical Schools.

The Mechanical Handiwork Committee will be in attendance at the Institute every evening from September 24th to September 29th, to receive applications for admission to the Mechanical Handiwork Classes.

The whole number of pupils in this department of the Institute for 1882-'83 is given as 191, but how many were day and how many night pupils is not stated. In October, 1883, there were 84 pupils in 6 classes. The classes are under the general direction of the “Committee on Mechanical Handiwork” for 1883-'84.

COMMITTEE ON MECHANICAL HANDIWORK.

JOHN J. WEAVER, *Chairman.*

T. BROOM BELFIELD, HENRY M. WORRALL, CHAS. S. HELLER, V. E. ARCHAMBAULT,
WM. H. CRAWFORD, H. G. SICKEL.

The Thirty-third Annual Report (1883-'84) gives the following statistics of the pupils attending the night classes; that part of the report given to the “Mechanical Schools” is mostly occupied with the day school, and will be given in the account of that school which

has developed so rapidly out of these Industrial Night Classes, and ranks as a well equipped, thorough "Manual Training" School.

Night pupils in metal, 91; extremes of age, 14 to 42 years; average age, 20 years, 6 months.

Occupation.—Apprentice machinists, 24; clerks, 12; students, 11; printers, 4; laborers, 4; engineers, 3; locksmiths, 3; sieve weavers, 2; blacksmiths, 2; stone cutters, 2; farmers, 2; musical instrument makers, 2; druggists, 2; lithographers, 2; and carriage builder, trucker, mold maker, plumber, loom builder, driver, tailor, molder, gas stove maker, weaver, wood engraver, carpenter, brass finisher, each one, and three occupations unknown.

Night pupils in wood, 17; extremes of age, 14 to 39 years; average age, 20 years.

Occupation.—Students, 8; draughtsmen, 3; real estate agent, machinist, carpenter, soap maker, wire worker, and engineer, each one.

These statistics show the practical utility of these opportunities for night instruction by the analysis given of the occupations of the persons who avail themselves of them. All but the 11 "students" are practical workers or apprentices. In the Day School with 95 pupils there are 73 students. These figures illustrate the different uses of the two kinds of schools—the night classes enabling workmen to supplement their education; the day classes enabling youth to obtain a definite methodical education in the elements of all Mechanical arts.

The statistics of the night mechanical classes as given in the Thirty-fourth Annual Report (1884-'85) are:

NIGHT CLASSES.—(Session, 7:30 to 9:30 p. m.)

In metal work, 36 members; extremes of age, 12 to 35 years.

In wood work, 16 members; extremes of age, 15 to 34 years.

In steam engineering, 11 members; extremes of age, 19 to 30 years.

Total attendance night classes, 63.

Occupations of night pupils.—Machinists and machinists' apprentices, 30; students, 9; draughtsmen, 5; cabinet makers, 2; weavers, 2; and carpenter, clerk, book-keeper, silk worker, wire maker, gold beater, errand boy, engineer, cigar-box maker, cloth finisher, wheelwright, dealer in machinery, and wood worker, each one; and two occupations unknown.

The Thirty-fifth Annual Report (June 30, 1886) shows a great decrease in attendance on the night classes, though there is an increase in the number of day pupils over the previous year. The total attendance in 1884-'85 was 164, of which 101 were day pupils. The total in 1885-'86 was 135, of which 115 were day pupils, being only 20 in the night schools.

The fees of all night classes had been made uniform at \$5 per annum. This makes the student a "subscriber," entitled to admittance to the library, to all lectures; and to classes in two nights a week. Lieutenant Crawford has resigned his position of superintendent of the mechanical department to accept a similar position in the new "manual training school" just established by the city of Philadelphia as one of the regular schools of the city system.

Mr. Arthur L. Church succeeded him in charge of the mechanical schools of the Institute. Mr. Church served until "the end of the

term with Mr. W. H. Norris as his assistant, Mr. Norris succeeding as superintendent when Mr. Church left the institute to accept a responsible position in the Baldwin Locomotive Works."

The following are the statistics of the night classes given under date of April 5, 1886:

NIGHT CLASSES.—(Session from 7.30 to 9.30 p. m.)

In metal work, 10 members; extremes of age, 12 to 35.

In wood work, 10 members; extremes of age, 12 to 22.

Total attendance, 135.

Occupations of night pupils.—Machinists, 2; draughtsmen, 3; at school, 9; clerks, 4; button maker, 1; merchant, 1.

Several pupils in the night classes have taken only the first half-term—three leaving, with six in the day classes, to accept positions with manufacturing establishments. During the year also a number have been admitted for short terms of special work.

ARTHUR L. CHURCH, *Superintendent.*

No suggestion by the managers or instructors is given anywhere in this report as to the cause of this very noticeable diminution in the number of the night pupils.

The Thirty-sixth Annual Report (1886-'87) shows a total attendance of 67 night pupils, an increase of 47 over the previous year.

NIGHT CLASSES.—(Hours, 7.30 p. m. to 9.30 p. m.)

In metal work: members, 40; in wood work: members, 27. Total, 67.

Ages from 11 to 36.

Occupations of pupils in night classes.—Machinists, 7; millwright, 1; at school, 19; brass finisher, 1; carpenters, 2; spinners, 2; surgical instruments, 1; inspector of electrical instruments, 1; molder, 1; office boys, 2; civil engineer, 1; draughtsmen, 3; clerks, 7; manufacturers, 3; pattern makers, 2; engineers, 2; collector, 1; printer, 1; wood turner, 1; coachman, 1; salesman, 1; unknown, 7. Total, 67.

COMMITTEE ON MECHANICAL HANDIWORK FOR 1887-'88.

WILLIAM H. CRAWFORD, *Chairman.*

HENRY M. WORRALL.

JOHN S. STEVENS.

THOMAS WOOD.

JOSEPH J. DE KINDER.

EDWARD LONGSTRETH.

ARTHUR L. CHURCH.

From the Thirty-Seventh Annual Report (1887-'88) the following summary of attendance in the night classes of the Mechanical Department is taken:—

There were 89 pupils in the night classes of the mechanical department. Exhibitions and closing exercises were held in conjunction with the drawing schools.

The usual list of prize winners in both the day and night classes of the Mechanical Department appears. The following paragraph is from the account of the public exhibition in the Ledger of April 17, 1888.

In the mechanical handiwork department the exhibits comprise samples of the various mitres and joints in wood work, patterns &c., and in iron work specimens of flat filing, fitting, &c., besides dynamos and small steam engines made by the advanced pupils.

In the Thirty-Eighth Annual Report (1888-'89,) seventy six pupils are reported as attending the Night Mechanical Classes.

In the Thirty-Ninth Annual Report (1889-'90) seventy-eight pupils are reported as attending the Night Mechanical Classes. The analysis of the occupation of the pupils, which was given in previous reports is omitted in these later ones. The Day Mechanical School as already announced was closed at the end of the school year of 1888-'89.

In the Fortieth Annual Report, sixty one pupils are reported as attending the Night Mechanical Classes. The work of these pupils was shown in the exhibition made of pupil's work both in the Day and Night Classes for Drawing and Art Instruction, and in the Night Schools for Mechanical Work, given in the main hall of the Institute during the week of May 18th 1891, reference to which is quoted in the account of the Drawing Schools just given.

COMMITTEE ON MECHANICAL HANDIWORK FOR 1891-'92.

THOMAS WOOD, Chairman.

WILLIAM H. CRAWFORD.

HENRY M. WORRALL.

JOHN S. STEVENS.

T. W. TIERNEY.

CHARLES LONGSTRETH.

JOHN SMETHURST.

ST. MARK'S WORKINGMEN'S CLUB AND INSTITUTE, PHILADELPHIA,
PENNSYLVANIA.

This institution is the result of an effort on the part of a number of large hearted, liberal-minded, christian men in the city of Philadelphia, to aid in the attempted solution of some of the problems of life for workingmen in large cities, and is of interest from several points of view. It was established in 1870 at rooms in Bainbridge street, below Sixteenth street, and seeks to combine with the attractions of a club the advantages of a beneficial society, a building and loan association, and a yearly coal association. Membership in any of these mutual aid societies is wholly voluntary. The club proper has a library from which books are loaned to the members, a reading room well supplied with books of reference, magazines, and daily and weekly papers, a recreation room, and a smoking room, all well furnished, warmed, and open from 7.30 to 10 p. m. each evening. Public literary and musical entertainments, open to members and their families, are given once a fortnight. There are evening free classes of instruction from 8 to 9 p. m. to which all members are admitted. The instruction is similar to that given in the Cooper Union Schools of Science and Art. There are weekly classes in mechanical and free-hand drawing which is the feature of the institution entitling it to notice in these pages. From a recent appeal to the public made by the executive committee for funds to erect a new building, the club having been so prosperous as to outgrow its original quar-

ters, the following extracts bearing upon the importance of industrial art education are taken:

To the manufacturers of Philadelphia, and others interested in the improvement of workingmen:

The question of the education of the artisans of this country in a thorough knowledge of their trades, and especially those engaged in the industries where artistic design forms so important a feature, is a matter not only interesting to those who from motives of benevolence and humanity wish to elevate the workingman to a higher condition of intelligence and refinement, but is an eminently practical question to the employer and manufacturer, affecting directly their pockets and the wealth of the country at large.

The wonderful constructive ability displayed by the American workman in the mechanic arts proves his great innate originality, stimulated, no doubt, in these trades, by necessity. This motive has not been, heretofore, to any extent, an incentive to those engaged in the art industries, partly because these industries can not be said to have abounded sufficiently to create the demand, but now the immense increase of these art manufactures makes the importance of developing native talent to meet the foreign competition daily more apparent. Compelled now, for want of educated taste at home, to send abroad for designs, we not only lack that originality which is so essential an element of good art in our manufactured products, but send annually out of the country millions of dollars.

Careful investigation of the causes which have led to the superiority, from time to time, of one nation over others, in the industrial arts, has established beyond question the fact, that where the artisans of a country have been thoroughly educated in the principles of industrial art, there will be found the excellence, not only of artistic beauty, but also of moneyed value in the manufactured products.

To Philadelphia, the largest manufacturing center of the United States, this matter is one of the highest importance, yet no city in the country is so lamentably deficient in opportunities for the workingman to obtain the instruction of which he stands so much in need.

To fill this and other needs, an institution was founded in the southwestern section of the city, in December, 1870, and now, after three years of successful operation, is about to erect a new building, to enable the various branches of its work to be carried on properly and efficiently. * * * The classes in mechanics and mathematics, as applied to the trades, meet the crying demand for technical education, made not only by the workingmen themselves, but also by their employers, who find great difficulty in obtaining men capable of performing their work in an intelligent manner.

The instruction in mechanical and free-hand drawing supplies the need referred to in the former part of this paper, as drawing may be considered the language of art, and therefore the basis of all art instruction. It is purposed, in the new building, to set apart considerable space for rooms especially arranged for these classes, and to engage competent instructors, who will devote several evenings of the week to teaching industrial drawing, and particularly the study of original design.

THE OFFICERS OF THE CLUB FOR 1873-'74.

Rev. FRANCIS D. CANFIELD, of St. Mark's Church, *President*.

H. D. WAGNER, *Resident Secretary*.

EPHRAIM CLARK, *Treasurer*.

HENRY BRIDGE, *Recording Secretary*.

WILLIAM P. PEPPER, *Corresponding Secretary*.

With an executive committee of twelve gentlemen.

The foregoing appeal and the active exertions of the friends of the club resulted in the procuring of the desired building and the Thirteenth Annual Report of the Executive Committee for 1882-83 shows a very prosperous condition. There was a membership of over five hundred. The club now occupies a new, large, and handsome building on the southwest corner of Seventeenth and Kater streets, has a permanent library of nearly 2,000 volumes, and receives a large number of American and English Reviews, Magazines, and Journals. The Committee on Entertainment and Instruction, who have provided an annual series of weekly lectures, purpose eventually a more directly educational development. At present this feature is in abeyance, and it is only historically, and in virtue of the foregoing admirably summarized statement of the claims of industrial drawing to the support of a manufacturing community, that the account of this club is retained in this Report. It was a notable attempt to provide such needed educational and other opportunities as the community had hitherto neglected to provide; and, as has often been the case with other similar efforts elsewhere, so soon as these facilities were provided by the city authorities they were given up by the club as no longer essential, and the labors and means of the club were directed to other needs. Thus when, in the winter of 1879-80, the city, at last, opened night schools for men, these evening instruction classes of the club were closed.

The evening drawing classes which were reluctantly closed the next winter were not, however, given up for the same reason, there being at that time no similar night drawing classes in the city.

The drawing classes of the club were established and conducted by Mr. H. Dumont Wagner, then the accomplished secretary of "the Pennsylvania Museum and School of Industrial Art," and were only given up by reason of Mr. Wagner's removal from the city to Chicago, and because there was no one connected with the club capable of teaching such a class after he left. There had been an average attendance of 25 men and boys upon the drawing classes.

The night classes of the Spring Garden Institute and of the Franklin Institute now afford similar facilities.

OFFICERS, 1883-84.

President : REV. ISAAC L. NICHOLSON, D. D.

Vice-President : REV. GEO. MCCLELLAN FISKE.

Treasurer : GEORGE HALL, JR.

Recording Secretary : WILLIAM LINDSAY.

Corresponding Secretary : WM. PLATT PEPPER.

Resident Secretary : JOHN C. DONOVAN.

There is also a general executive committee of 18 gentlemen.

CHAPTER III.

THE MARYLAND INSTITUTE FOR THE PROMOTION OF THE MECHANIC ARTS, BALTIMORE, MARYLAND.

Early History.—The First Maryland Institute, founded in 1825.—After ten years of prosperity an interregnum of twelve years occurred, due to destruction of property by fire.—New Institute revived in 1847.—Educational work.—Night Classes.—Day Art Classes begun in 1860.—General educational purposes of the first founders.—Changes resulting from development of public schools.—Historical Summary of First Institute given in address by President Joshua Vansant, in 1851.—Founded by John H. B. Latrobe and others in emulation of the Franklin Institute in Philadelphia.—Extracts from first Constitution and By-Laws.—Extracts from Historical Address by Hon. Ferdinand C. Latrobe, ex-Mayor of Baltimore, on occasion of complimentary banquet given March 14th, 1887, by the Managers to Joseph M. Cushing, Esq., President of the Institute.—Interesting historical associations recited.—Famous Industrial Exhibitions held.—Courses of Popular Lectures given in its spacious Hall.—Growth of Library.—Managers progressive and liberal.—Centennial Exhibition stimulated effort in the direction of Art Education, both as applied to Industries and in the Fine Arts.—Thirtieth Annual Report (1878) recites new charter.—Powers of the Institute enlarged.—Educational Features made prominent.—Annual appropriation of \$3,000 made by the State.—Changes in Charter and By-Laws noted.—Duties of officers defined.—New Departure in 1879.—Schools reorganized.—Professor Woodward retires and Professor Hugh Newell called from Principalship of Pittsburgh School of Design.—The Building is remodelled and much improved for use of the schools.—Special Report by committee appointed to visit and report on Art Schools in other cities, made by Hon. Carroll Spence, LL. D., chairman, November, 1879.—Extracts from this report.—Drawing in Public Schools of Maryland, urged.—Proposition to train Teachers for Public Schools in Draughting.—Industrial Art Museum suggested.—Memorial to Legislature urging Drawing in public schools presented by this Committee in 1880.—Advance in ideal of public school drawing due to Centennial.—“Sun” article on these two reports.—List of officers for 1879-’80.—Pamphlet appealing to citizens of Baltimore issued 1880.—Extracts from this pamphlet.—President James H. Bond in Thirty-third Annual Report (1881) recites progress.—Extracts from this report.—President Bond records fact that the municipal authorities have just made an appropriation of \$3,000 designed to be annual, in aid of the schools.—Address of Hon. S. Teackle Wallis at annual commencement of schools, April, 1881.—Extracts from this brilliant address.—Recites interesting anecdote of Rinehart, the sculptor.—Urges additional support by citizens.—Shows worth of such instruction to the community.—Mr. Wallis urges, also, the establishment of a high class school for mechanical instruction.—Attention called to the series of remarkable commencement addresses delivered annually.—Extracts from Mr. Skipwith Wilmer’s address to the Graduating class of the Commercial School, 1881—Eloquent conclusion.—Thirty-fourth annual Report (1882) records with pride the growing development of the Art Schools.—Commencement addresses by Hon. Bradley T. Johnson, A. Leo Knott, Esq., and John M. Carter, Esq., an ex-President of the Institute.—Mr. Johnson recites the Art Education given by the State in Belgium as an ex-

ample for Maryland.—A Parisian Industrial School described.—A system of public industrial art education portrayed and plans suggested for its realization by the community.—Mr. Knott closes his address with a rapid sketch of the rise of modern Industrial Art in Continental Europe and in England.—Thirty-fifth Annual Report (1883), Mr. Samuel W. Regester, President.—The decay of the former exhibitions noted and accounted for.—Activities of the Institute transferred to its schools.—Commencement addresses (June, 1883), by Charles J. Bonaparte, Esq., and Joseph M. Cushing, Esq.—Mr. Bonaparte antagonized the public free schools; his arguments stated and commented on.—Extracts from his address relating to the schools of the Institute and emphasizing their value to the community.—Extracts from Mr. Cushing's admirable business talk to the graduating pupils.—Professor Hugh Newell retires at the close of the year 1883-'84, to practice his Art and to give more time to his duties in Johns Hopkins University.—Success of the schools while under his direction.—Professor Otto Fuchs, then Principal of the Massachusetts Normal Art School, the direct successor of Walter Smith in charge of that school, was fortunately secured by the managers of the Institute to succeed Mr. Newell.—List of Officials for 1883-'84.—President Latrobe's report in Thirty-sixth Annual Report, 1883-'84.—Professor Fuchs' first annual report under date of June 3, 1884.—A pamphlet illustrated with lithographs of pupils' work.—Radical changes introduced in night school—regular courses instituted and regularity of attendance required.—Commencement exercises June 3rd, 1884.—Address by President D. C. Gilman, of Johns Hopkins University.—Copy of address not furnished for publication.—Appears as No. 1 of the series of "monographs," issued by New York Industrial, Education Association.—Hon. Wm. A. Fisher, Judge of Supreme Bench of Baltimore City, delivered the address to the Graduates.—Provost Morison, of the Peabody Institute delivered the Peabody prizes.—Thirty-seventh Annual Report by Board of Managers for 1884-'85.—Prospectus of Schools for 1885-'86.—Improved grading of courses in both Day and Night Schools.—Extracts from Second Annual Report by Professor Fuchs, under date June 2nd, 1885.—Modelling in Clay first introduced in the schools during this year.—Great improvement noted in night schools ascribed to graded courses of study and to better discipline.—Statistics of attendance.—Commencement exercises June 2nd, 1885.—Address by Hon. J. Morrison Harris.—A plea for the intellectual character of the Trades and Industries.—Professor M. A. Newell, State Superintendent of Education, addresses the graduating class.—The Peabody Premiums distributed.—Prominence given in the leading Baltimore Journals to these exercises by printing the lists of graduates and of prize winners.—Coöperation of the leading editors with the Institute.—Thirty-eighth (1886) Annual Report and accompanying papers.—Extracts from Managers' report giving statistics.—Third Annual Report of Professor Fuchs.—Exhibition of pupils' work.—Commencement exercises June 1st, 1886.—Address by His Honor Mayor Hodges.—A strong plea for Art in Industry.—Forcible and interesting address to the graduates of the Commercial School by George R. Skillman, Esq.—Pamphlet account of complimentary Dinner given by the Board of Managers to the President of the Institute, Joseph M. Cushing, Esq., March 14th, 1887.—Extracts from the Historical and other addresses delivered on this occasion.—Reminiscences of Hon. John H. B. Latrobe, the venerable founder of the Institute, read by his son, Hon. Ferdinand C. Latrobe, ex-President of the Institute, and ex-Mayor of the City.—Letter from Mayor Hodges.—Report by Professor Fuchs.—Remarks by State Superintendent Newell.—History of the Founders by John M. Carter, Esq., ex-President of the Institute.—Thirty-ninth Annual Report (1887).—Terms of City appropriation.—Gift by Mr. A. S. Abell.—Commencement exercises June 7th, 1887.—President Cushing's opening address.—Extracts from Professor Fuchs' report.—Address by ex-Mayor Latrobe.—He urges the importance of Technological Schools; refers with pleasure to the one begun in 1885 by the Baltimore and Ohio Railroad Company under direction of M. W. P. Barnard; urges that the city of

Baltimore shall promote technical education, and points out how the various Art Industrial Educational institutions in Philadelphia have aided in developing the industries of that city.—Fortieth Annual Report (1888).—Continued success of the schools.—Increase in number of pupils.—Increased appropriation by the State.—Annual financial statement.—Commencement exercises held in Holliday Street Theatre, June 5th, 1888.—Brilliant audience.—Opening address by President Cushing.—The President recites the increased resources of the Institute arising from appropriations, legacies, and gifts during the past year.—Professor Fuchs' annual report as principal of the Art Schools.—Address by Col. I. Edwards Clarke.—“The Message of Art to modern men.”—The worth to the community of the work undertaken by the Institute.—Art teaches how labor may be made a delight, urges to simplicity of living as opposed to thoughtless luxury, incites to love of beauty in contrast with mere obedience to whims of fashion, inculcates harmony between the surroundings of nature and the works of man.—Illustrations of such harmony in well-known features of Baltimore.—Address to the graduates by Professor M. A. Newell.—Suggestive anecdote—“Rest and pass on.”—These graduates are but commencing not closing their education in Art.—List of officers and members of Board of Managers and of Standing Committees for 1888-'89.—Forty-First Annual Report (1889).—Mr. John K. Cowen delivered address at Commencement, June 4th.—His address not reported.—Professor Fuchs' reports prosperity of the schools and additions to models.—Forty-Second Annual Report (1890).—Professor Fuchs urges formation of an Art Library and of a collection of specimens of approved art work for the use of the pupils.—Address by the Mayor, Hon. Robert C. Davidson.—Forty-Third Annual Report (1891).—The Board of Managers report greatly increased activities.—The beginning of an Art Museum.—Report by Special Committee of visits to American Art Schools in Eastern and Western cities.—Professor Fuchs sent to Europe to visit Art and Technical Schools.—Report of Committee on Museum.—Eloquent address by Hon. John Prentiss Poe.—Tribute by Board to three distinguished members of the Institute who died during the summer of 1891.—Col. James H. Bond, Hon. John H. B. Latrobe and Mr. Samuel Sands.—List of officers and members of Board of Managers and of standing committees for 1891-'92.

The Night School of Design.—History of, in Baltimore American, September 22nd, 1874.—Opened in 1848.—Professor Samuel Smith the first Principal.—Mr. William Minifie Principal in 1852-3 and 1853-4, followed by Professor D. A. Woodward.—Prospectus of School for session of 1875-6.—Summary of statistics from 1875 to 1879.—Professor Hugh Newell put in charge 1879.—Rooms rearranged.—New furniture and materials procured.—The schools so reorganized as to be practically new schools.—A graded course arranged.—Prospectus of Night School for 1879-'80.—The success of the next year's work recorded in the Thirty-third Annual Report of the Board of Managers of the Institute (April, 1881).—Also in those for the two succeeding years.—Prospectus for 1883-4.—The resignation of Professor Hugh Newell and the calling of Professor Fuchs announced.—Statistics given in Professor Fuchs' First Annual Report (June 3rd, 1884).—Statistics and comments given in Reports of Board of Managers of the Institute, and in those of the Principal of the Schools, for the years 1884 to 1891 inclusive.

THE MARYLAND INSTITUTE FOR THE PROMOTION OF THE MECHANIC ARTS—SCHOOLS OF ART AND DESIGN. BALTIMORE, MARYLAND.

The first Maryland Institute had its origin in the interest taken by a few public spirited citizens of Baltimore in the education and welfare of the class of industrious citizens who pursued the mechanic arts. They saw that upon the skillful training of these workers

must largely depend the development and prosperity of the city. After a prosperous existence for ten years their property was destroyed by fire and for some twelve years there was an interregnum. The present Institute is their legitimate successor, and for the past forty-four years has energetically continued the good work they initiated. While the Franklin Institute, of Philadelphia, is the first in point of time and Cooper Union, in New York, a contemporary of the revived Maryland Institute, has, perhaps, extended its opportunities to a greater number of students, still the first Maryland Institute was founded but a year later to that of Philadelphia, and since their re-establishment the night classes of its successor have been continuously thronged with all the students who could find room to work in the large school rooms so generously provided. Since 1860 the Institute has also attempted to provide instruction in the fine arts by means of day classes open to both sexes. The original intention of the founders of the Institute looked to the furnishing of as complete an education as possible and comprised schools of Chemistry, Languages, Music, and a Commercial School; as well as the Library, Courses of Lectures, and the Schools of Art and Design, thus affording to their members advantages similar to those afforded by Cooper Union, and by the Mercantile Library of New York, the Young Men's Christian Association, etc. Some of these schools have been discontinued at times from various causes, but as they do not come within the purpose of the present Report, which has to do only with schools of Industrial Art, or of the Fine Arts, further notice of these other departments of the Institute must be omitted. A brief history of the founding of the two Institutes and such extracts from the constitution and by-laws as are needed to show the organization and purpose of the present Institute are given preliminary to the special account of the schools.

The organization known as "The Maryland Institute for the Promotion of the Mechanic Arts" was the result of action taken in pursuance of a call issued on the 30th of November, 1847, and signed by Benjamin S. Bensen and sixty-nine others, for a meeting to be held at Washington Hall, of all persons favorable to forming a Mechanics' Institute.

At this meeting a preliminary organization was effected which, at an adjourned meeting formally adopted a constitution and elected its officers and managers July 12, 1848.

An exhibition was given at Washington Hall in October of that year; there were 415 exhibitors, and \$3,163.00 were taken as admissions to the fair. There were 217 members. A similar fair has since been held annually. A charter was obtained from the legislature in 1850.* Through the aid of the city council, who permitted the Institute to erect a hall above the new market,—the city building the first story, and using it as a market,—the Institute found itself in possession of a commodious building adapted for its annual exhibitions, and with ample additional room for its library and schools; it having a front of 60 feet upon Baltimore street, and

*The official statement of The Maryland Institute for 1879-80 gives this date of the charter as December, 1849, which is the date of its passage by the Legislature.

extending 355 feet to Second street. The hall of the Institute has a fine entrance upon Baltimore street. The cost of the building was about \$105,000.

In 1825 John H. B. Latrobe and others incited by the founding of the Franklin Institute in Philadelphia in 1824, founded the first Maryland Institute. They gave two exhibitions of articles of American manufacture, and yearly courses of lectures illustrated by excellent philosophical apparatus. They also collected a library. Their entire properties were destroyed by fire in 1835.

The above statements are taken from the address delivered at the close of the 4th exhibition, by President Joshua Vansant, November 19th, 1851. There had been a large increase in the number of articles exhibited, and in the receipts for admission with each succeeding exhibition.

THE SCHOOLS OF DESIGN.

In speaking of these schools, Mr. Vansant said: "There is one department, at least, to which the public has given such general approval and commendation, and which promises such gratifying results, that I cannot, without much injustice to the senior and junior members of the Institute, pass unnoticed,—I mean that department which opens to the membership the School of Design. To all engaged in Mechanics, is thus offered an opportunity for learning those branches in drawing, which are not only of the greatest importance and utility, but which are indispensable to a perfection in Mechanic Arts. There are nearly eight hundred junior members of the Institute. They are young men meritorious because of their exemplary characters, and because of their desire so to improve themselves, as to render their labors advantageous to society, as well as to themselves. These young men are not content with the performance of the mere physical task allotted to them by their parents or masters, but they have evinced a determination to understand the *rationale* of their calling, and to make themselves, in every essential, the *masters of art*. My life upon it, that they will, as a body, make better men,—better citizens, and more skillful, and more prosperous mechanics, than any corresponding number of young men in this city, outside of the membership. Does not a system which promises to accomplish so much good, challenge the support of every good citizen? Is it not a great public benefaction?"*

The preamble to the constitution sets forth the objects of the Institute as follows:

"Whereas, the Mechanics, Manufacturers, Artizans and other citizens of Maryland, impressed with the importance of fostering the inventive genius of their countrymen, of exalting the character of the members of their respective professions, and of increasing the trade and business of the commercial mart of the State, and having associated themselves together, and obtained a charter from the Legislature of Maryland, under the name and title of the "Maryland Institute for the Promotion of the Mechanic Arts;"—to accomplish the objects in view, have made provision:

1st. For holding an Annual Exhibition, where American Mechanics, Manufacturers, Inventors and Artists, and all who may have made any discoveries in the Arts and Sciences, may be enabled to exhibit the productions of their skill and ingenuity, in competition for the medals, diplomas, and other prizes which may be offered by the Institute for superiority.

2nd. For examining and reporting upon the merits of new inventions and improvements whenever desired.

3rd. For the formation of a School of Design, adapted to Mechanical, Manufacturing and Scientific purposes, in which the members of the Institute may be

*See, in this connection, extracts from the published lectures delivered by Mr. William Minifie, master of the School of Design, at opening and close of the school in 1852-53 and 1853-54, which are given in Appendix A, Part I of this Report.

taught the art of Drawing and Designing, a branch of education so necessary in every business and profession connected with the Mechauc Arts.

4thly. For the establishment of Popular Lectures, on subjects mainly connected with Manufactures, Méchanics, and the useful arts.

5th. For the formation of a Library and Reading Room, a Cabinet of Minerals, Models, and Philosophical and Mechanical apparatus.

6th. For establishing a School of Applied Chemistry to be called the "Chemical Department of the Maryland Institute," where the science may be thoroughly taught in all its branches, under a Professor and Assistants.

In order to make the necessary provision, for effecting these desirable purposes, in obedience to the requisitions of the Charter, they have established the following Constitution and By-Laws for their government.

ARTICLE I.—*Name and Object.*

SEC. 1. This Association shall be known and designated as the "Maryland Institute for the Promotion of the Mechanic Arts."

SEC. 2. The objects of the Institute shall be the promotion and encouragement of Manufactures, the Mechanic and Useful Arts—and the mental improvement of the industrial classes.

ARTICLE II.—*Membership.*

SEC. 1. Any person may become a member of the Institute in the manner hereinafter provided for in the By-Laws.

SEC. 2. Members shall be over twenty-one years of age, and friendly to the objects of the Institute.

Junior Members shall be minors, not younger than fourteen years of age.

Life Members shall be such persons as pay twenty-five dollars to the Institute for Life Membership.

Honorary or Corresponding Members shall be persons of distinguished reputation, in connection with the objects of the Institute, or such as may have rendered it important service. They shall be elected by the Board of Managers, at their stated meetings, who shall report such elections to the next stated meeting of the Institute. Two-thirds of those present shall be required to elect an Honorary Member.

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ARTICLE VIII.—*Management.*

The Board of Managers shall have the management of the funds of the Institute, and all matters of finance connected therewith, and shall employ its revenues on the following objects, viz :

First. The providing an annual exhibition of the production of American skill and industry, to be held in the city of Baltimore.

Second. In affording at all times every reasonable facility for the trial and examination of such new inventions and improvements as may be submitted to the Board for that purpose.

Third. In conducting a School of Design, adapted to mechanical, manufacturing, artistic, and scientific purposes.

Fourth. In the establishment of popular Lectures on subjects connected as far as practicable, with manufactures, mechanics, and their collateral sciences.

Fifth. In the formation of a library and Reading Room, a Cabinet of Minerals and Models, and Philosophical and Mechanical Apparatus.

Sixth. In fostering the chemical Department of the Institute.

TERMS OF MEMBERSHIP ETC.

Three dollars per annum, and two dollars on joining, making five dollars for the first year, payable in advance, on the 1st of September.

Twenty five dollars will constitute any person a Member for Life.

No Member or Junior Member shall be entitled to admission to the Exhibition, Lectures, School of Design, Library, &c., until his annual contribution for the current year shall be paid.

The use of Tickets of Membership is in no case to be transferred.

Junior Members, (youths between 14 and 21 years), are charged but half the sum levied upon Members, or two dollars and fifty cents for the first year, and one dollar and fifty cents yearly thereafter. They are entitled to the use of the Library, to tuition in the School of Design, and admission to the Exhibition Lectures, &c., at all times, with a lady.

SCHOOL OF DESIGN.

The school will be in session three evenings—(Monday, Wednesday, and Friday, as a general rule)—in the week, at 7 o'clock, to February 1st, and at 7½ o'clock for the balance of the season. The whole term lasts four months, from November to March.

LECTURES.

The Lectures before the Institute begin during the month of November, and take place, (as a general rule) twice a week, on Tuesday and Thursday evenings, until the close of the season, which is in the month of March. Each Lecture will be duly advertised in the daily papers as it is about to be held. They are held in the main saloon.

In this connection, the following historical address, delivered by the Hon. Ferdinand C. Latrobe, ex-mayor of the city and a former President of the Institute, on the occasion of a complimentary banquet given on March 14, 1887, by the members of the Board of Management to the then President of the Institute, Joseph M. Cushing, Esq., will be found of value, as it embodies most interesting reminiscences by his venerable father, Hon. John H. B. Latrobe, to whom, more than to any single individual, is due the founding of the Institute. It will be seen that not only by the influence of its schools and lectures, but by the uses of its hall, the Maryland Institute has been, for a half century, intimately associated with the civic life of Baltimore, and even with public occasions which have had close relation with interests and events profoundly affecting the whole country; as, for instance, the meeting there of the bolting Democratic convention which resulted in the nomination of John C. Breckinridge against Abraham Lincoln.

Reference to the occasion which led to this address will be found in due place in the following account of the Institute; these historical statements seem, however, properly to belong here.

The remarks of Mr. Latrobe were in response to the toast, "The Maryland Institute—its Past, Present, and Future."

* * * For more than sixty years the Maryland Institute has been closely identified with Baltimore. During this long period it has numbered among its presidents, managers, patrons and graduates many of our distinguished citizens. Its

industrial exhibitions, its library of 20,000 volumes, and its lectures have afforded instruction, information and pleasure to our people, while its hall has become historical through its connection with so many important events in the history of the country. Its energies are now mainly concentrated on its School of Art and Design, whose 626 day and night pupils attest continued usefulness to this community of the Maryland Institute.

THE FOUNDERS OF THE INSTITUTE.

A short story of its origin may be neither uninteresting nor inappropriate on this occasion. In giving it I shall quote somewhat from an address delivered before the Institute November 19th, 1851, by its then president, the late ex-mayor and city comptroller, the Hon. Joshua Vansant. The first institution of a similar character in the United States was the Franklin Institute of Philadelphia, which was successfully established in 1824. It was soon after, in the year 1825, that, in the language of Mr. Vansant, "John H. B. Latrobe (then little more than a stripling) determined upon the formation of a similar institute in Baltimore, and being encouraged by Fielding Lucas, Jr., and others, a meeting was called for the purpose, and the first Maryland Institute for the Promotion of the Mechanic Arts was organized. On the 10th of January, 1826, it was incorporated, with the following board of managers: President, William Steuart; vice-presidents, George Warner and Fielding Lucas, Jr.; recording secretary, John Mowton; corresponding secretary, Dr. William Howard; treasurer, Samuel Hardin; managers, James H. Clark, John D. Craig, D. G. McCoy, Jacob Deems, Solomon Etting, William H. Freeman, Benjamin C. Howard, Moses Hand, William Hubbard, William Krebs, Thomas Kelso, Robert Carey Long, John H. B. Latrobe, Peter Leary, William Meeteer, James Mosher, Hezekiah Niles, Henry Payson, William Roney, Joseph K. Stapleton, William F. Small, James Sykes, James R. Williams and Samuel D. Walker."

These were prominent and well-known citizens at that time; many of them have left their impress on this community; but one of them survives, Mr. John H. B. Latrobe. Some reminiscences of the early history of the Institute, written by this survivor, to which I have had access, thus describes the personal appearance and characteristics of these gentlemen. He says: "The election of the president was unanimous. Col. William Stewart had been active in all public matters for many years; he had been mayor of the city, a member of the city council, was active in its railroad enterprise, and prominent in the Legislature when Baltimore had but two representatives. Of the mechanics of the town he was perhaps most looked up to. His marble-yards were celebrated in those days. A broad square-shouldered man, he bore about him unmistakably the evidence of his Scotch descent in features, complexion and keen grey eye." Fielding Lucas, Jr., is described as "a tall and powerfully built man, who had been eminently handsome in his youth, fond of art, apt in the use of tools, a member of the city council and of the first board of directors in the Baltimore and Ohio Railroad Company, a genial companion and devoted friend, deeply concerned in all that promised to advance the interest of the city." Hezekiah Niles is spoken of as "a small, round-shouldered man, with a sharp, quick look, the editor of Niles's Register, whose patient industry was only equaled by his unswerving accuracy." Dr. William Howard, "a son of Howard of Cowpens, a man of varied science, chemist, civil engineer, apt in all mechanical pursuits, a large, broad-shouldered, black-haired man, more familiar with philosophical apparatus than was any one in Baltimore in those days." James Mosher, "a portly, thick-set man, at the head of the brick-laying guild, who had built the old Baltimore Exchange." William Krebs and George Warner, "whose brick-yards had furnished millions of the bricks their companions had laid." Robert Carey Long, "a man of spare and feeble frame and small stature, poet, artist and architect." John D. Craig, "teacher, mathematician, classical scholar and astronomer, considered by many as the most

profoundly learned man in Baltimore about the year 1825." Jesse Hunt, "mayor of Baltimore, member of the Legislature, one of the most esteemed of the mechanics through his industry and skill in our local industries." Joseph K. Stapleton, "a great authority in all Masonic matters." Solomon Etting, a prominent merchant. William Meeteer and James Sykes, large manufacturers. Benjamin C. Howard, "for many years reporter of the Supreme Court, lawyer, soldier and statesman." William H. Freeman, "lawyer, a man of restless activity and rare energy." Such is the pen-picture of some of those early directors, as given by their surviving colleagues. At that time the population of Baltimore was about 70,000. It was before the day of railroads, when the Conestoga wagons, which crowded Howard street and Pennsylvania avenue loaded with the produce of the West, came lumbering over the mountains at the rate or about three miles per hour to tide water at Baltimore.

EARLY EXHIBITIONS.

The first exhibition of the Maryland Institute was held November 6, 1826, in a building known as Concert Hall, on South Charles street; the second in the same in 1827. Lectures and addresses were delivered at the Institute from time to time on interesting subjects by prominent citizens. I have now in my hand the original manuscripts of two of these addresses, delivered in 1829 and 1830, by the gentleman to whom I have referred as the only survivor of the first board.

THE FIRE.

On February 7, 1835, while occupying a part of the Athenæum Building on the southwest corner of St. Paul and Lexington streets, the Institute was burned out, with all its properties, including a most valuable philosophical apparatus. It was thus dissolved after ten years of useful existence.

THE INSTITUTE REORGANIZED.

On November 10, 1847, a call, signed by Benjamin S. Benson and 60 others, was issued for a meeting of all favorable to the formation of a Mechanics' Institute. The meeting was held December 1, 1847, with Jesse Hunt in the chair and John B. Easter secretary. John H. B. Latrobe delivered an address explaining the call. It resulted in the formation of a new Maryland Institute, whose officers were elected January 12, 1848, Joshua Vansant being chosen its first president. In 1850, June 6, during the mayoralty of Elijah Stansbury, an ordinance was passed by the mayor and city council authorizing the erection of the present building on "Marsh Market Space, over the market-house at Centre Market, between Baltimore and Second streets," provided the consent of the stall-owners could be obtained. The preamble of the ordinance stated that the building was to be "after the plan of Faneuil Hall in Boston, * * * for the purpose of annual exhibitions of the Maryland Institute and to supply a place for public meetings on general occasions." The city appropriated \$15,000 provided a similar sum should be subscribed by the citizens.

HISTORICAL ASSOCIATIONS CONNECTED WITH THIS BUILDING.

The corner-stone of the present building was laid March 13, 1851, by Hon. J. H. T. Jerome, mayor, on which occasion an address was delivered by S. Teackle Wallis, Esq. On 20th of October, 1851, the building was sufficiently advanced to permit the fourth annual exhibition being held therein. The opening address was delivered by Hon. Joshua Vansant. For many years annual industrial exhibitions were given, and courses of interesting lectures were delivered. Distinguished men have stood upon its platform as lecturers. Among the many addresses preserved in its archives are those of John Tyler, ex-President of the United States; John P. Kennedy; Lieut. Maury, of the National Observatory; Walter R. Johnson, Henry Winter Davis,

Thomas Swann, William Prescott Smith, Joshua Vansant, S. Teackle Wallis, and others. It has numbered among its friends who have rendered it strong financial aid George Peabody, Thomas Swann, Johns Hopkins, A. S. Abell and others; the clock, in its tower, was given by Enoch Pratt. Its name has been made historical by the conventions and other important assemblages held in its hall. On December 27, 1851, the reception given by Baltimore to Louis Kossuth took place in the Maryland Institute. On June 5, 1852, the National Democratic Convention there nominated Franklin Pierce as candidate for President of the United States. On June 16, 1852, the Whig convention there nominated for the same office General Winfield Scott. On September 17, 1856, the old-line Whig convention assembled there and indorsed the nomination of Millard Fillmore. June 30, 1857, the reception was there given by Baltimore to George Peabody. March 10, 1857, the body of Dr. Kane, the Arctic explorer, was laid there in state. September 13, 1858, it held all that was mortal of Wells and McComas. June 8, 1860, the city there received the first embassy from Japan to the United States. June 13, 1860, the bolting members from the Democratic National Convention, representing nineteen States, left Front Street Theatre, met at the Maryland Institute, elected Caleb Cushing, of Massachusetts, as chairman, and nominated for President John C. Breckinridge. April 2, 1866, the great Southern relief fair was held there, realizing \$146,569.97. July 24, 1868, its foundations were threatened by the great flood of Jones's falls, the water rising nearly six feet around its base. September 19, 1871, the great reception and banquet was given to the Knights Templar of the United States. The last industrial exhibition was given in October and November 1878, during which the Institute was visited by President Hayes; and, afterwards, by the Chinese embassy from Washington.

CHANGE IN ACTIVITIES DUE TO OPENING OF OTHER LITERARY INSTITUTIONS IN THE CITY.

"Such is the past history of the Maryland Institute. The Peabody Institute, the Johns Hopkins University, and the Enoch Pratt Library supply those demands for books and lectures which for so long a time it filled, so that its energies are, as I have stated, confined mainly to its School of Art and Design. This furnishes a thorough course of architectural, mechanical and artistic drawing to its numerous students. Its professors are equal in skill and ability to those of any similar institution in the country, and its graduates have no difficulty in obtaining lucrative employment. Receiving only the small sums of \$3,000 each from the State and City, this valuable and venerable institution has often to appeal for aid to the liberality of our citizens. Thus far it has never asked in vain. For its future we can but express the hope that, founded as it was by some of Baltimore's most distinguished citizens, after sixty years of great usefulness, it may continue to furnish graduates from its schools who will be a credit to their *alma mater*, and of some service in furthering the prosperity of the city and State."

The Institute was known to the public, during the years that followed its organization, through the great exhibitions held in its building and under its auspices, and by the courses of lectures from time to time delivered in its spacious hall. The knowledge of the work done in its night classes was mostly confined to the pupils and their friends. It gradually increased its library, made up largely of standard and miscellaneous literature, taking special care to procure works on architecture and the mechanic arts.

The latest works for general reading are now constantly added and members may take them for two weeks, without charge. The

reading room is also kept supplied with the leading magazines. At this time (1880) the library numbers some 19,000 volumes, of which some four or five hundred may perhaps be classed as bearing more or less relation to art; though there is no special division of the library known as the Art Library, yet there is much there which the art students can consult with profit. The opening of the noble Peabody Library, to which all have access and in which are many works relating to art, adds much to the facilities of the art student in Baltimore, while its complete set of British patents make it of special value to inventors and students of the mechanic arts. With access to these two libraries the students of the Maryland Institute Schools of Art and Design may have sufficient literary helps in the acquisition of a knowledge of the history and progress of the Arts of Design.

The managers of the Maryland Institute seem always to have been progressive and liberal in their views regarding the purpose of their institution. The influence of the Centennial Exhibition of Philadelphia, of 1876, was not, however, without its stimulating effect upon them, as well as upon the country at large. Perhaps it would be nearer the truth to say that the effect of that wonderful series of object lessons in the application of the fine arts to industries, upon all who saw it, and indirectly upon those who only heard of it, was to develop a public sentiment in reference to the value of industrial art training, which has at last enabled the managers to infuse new life into their efforts, and to undertake expenditures in providing increased and superior facilities for instruction in which they would not before have been justified. Certain it is that they have infused new life into their schools.

In the Thirtieth Annual Report by the Board of Managers under date of April 23, 1878, signed by President John M. Carter, the following important action by the Board is recited:

NEW CHARTER.

Pursuant to the authority delegated at the last annual meeting of the Institute, the Board, through a committee appointed for the purpose, applied to the General Assembly of the State for an extension of the charter of the Institute, which will expire during the next session of the assembly.

We submit herewith a properly certified copy of the law passed, and it now devolves upon the Institute to formally accept the extension of the franchise.

It will be seen that a new feature has been introduced at the instance of the Board—reducing the number of the Board from 30 to 25, providing for the election of a President, Vice-President, Secretary, Treasurer, and seven managers annually, and extending the term of the managers to three years.

This feature of permanency is deemed a decided improvement upon the present system, as while it provides for a change of administration annually by the election of the President, general officers and seven managers, it ensures the retention of a majority of trained and experienced men in the Board, and prevents a violent or sudden revolution in the affairs of the Institute by the election of an entire new Board at a single election.

We recommend the appointment of a committee to revise the Constitution and By-Laws of the Institute, so as to conform to the new order of things, and to propose such other changes as experience may dictate to be advisable, and in this connection would urge the adoption of the amendment proposed at the March meeting to abolish the plan of purchasing life membership in the Institute by the transfer of its own stock.

The main features of the new charter and of the by-laws adopted under it have a close resemblance to those of the former, already quoted. The grants in the present charter are of a more general nature. The "extension of the charter," passed by the legislature in the "January session of 1878, chapter 313," consists of ten sections.

Section 1 incorporates the Institute with full powers and with authority to hold property not to "exceed in value the sum of two hundred and fifty thousand dollars."

Section 2 prescribes the conditions of membership, which, in addition to the classes enumerated, may include persons friendly to the mechanic arts. The next section enumerates the objects of the corporation as follows:

SEC. 3. *And be it enacted*, That the objects of said corporation shall be the encouragement and promotion of manufactures and the mechanic and useful arts, by the establishment of schools and popular lectures upon the sciences connected with them, the formation of schools of art and design, providing a library, reading-room and cabinet of minerals, models and mechanical apparatus; holding exhibitions for articles of American manufacture, offering and awarding premiums for excellence in those branches of industry deemed worthy of encouragement; examining and reporting upon such new inventions as may be submitted for the purpose, and by such other means for the promotion of the Mechanic Arts as experience may suggest.

Section 4 enumerates the officers and, as has been noticed in the report of the board of managers, provides that the officers are to be classified with terms of differing duration, thus securing greater permanence in the policy of the management.

Section 5 confers authority on the corporation to manage its affairs in accordance with the constitution and by-laws as they may be modified at its discretion.

SEC. 6. *And be it enacted*, That said Institute shall be authorized and empowered to graduate students in its various schools, and to grant diplomas to such as, after proper examination, may be found worthy of the distinction.

SEC. 7. *And be it enacted*, That the Treasurer of the State of Maryland be and he is hereby directed to pay annually to the President of the Institute, in the month of April, the sum of three thousand dollars, which shall be used in behalf of its various schools of learning and educational departments, and shall not be diverted therefrom for any purpose whatever.

Section 8 directs the President to report to the Governor of the State in regard to "the schools of art and design and other educational departments" of the Institute annually in September.

Section 9 forbids the issue of any script, etc., as currency.

Section 10 directs that this act take effect from date of passage.

In the by-laws the changes are in regard to membership, the addition of "female life members" on payment of \$10. "Male life members" pay \$25, and the addition of "lady members," who pay an annual subscription of \$3, which is the fee of all ordinary members. Annual fees are due and payable in advance, September 1.

ARTICLE V.—*Board of Managers and their Duties.*

ELECTION OF COMMITTEES, ETC. :

SECTION 1. The Board shall, immediately after their election, elect by ballot from their own body the following standing committees, viz: Committee on Exhibition, to consist of nine; Committee on School of Design, to consist of seven; Committees on Lectures, Library, Hall, Chemical Department, Commercial Department, Music, and Finance, to consist of five each; and a Committee on New Inventions, to consist of nine members of the Institute.

Section 2 directs the annual election by the Board, from among the members of the Institute, of an actuary, who shall also act as librarian; of professors of the different educational departments; of a janitor and other needed officials.

Section 3 confers general powers over all the concerns of the Institute; directs an annual report at first stated meeting in April; the keeping of regular minutes; stated meeting on first Monday in each month; nine members being a quorum, but, at any special meeting, thirteen members shall be necessary to form a quorum.

Article VI defines in three sections the duties of the President, Secretary, and Treasurer.

Article VII defines in thirteen sections the duties of the standing committees. The following is the section relating to the Schools of Design:

COMMITTEE ON SCHOOLS OF DESIGN.

SEC. 4. This committee shall make the necessary arrangements for opening the schools not later than the third week in November, and keep them open at least four months. They shall employ competent teachers to take charge of the schools, establish rules and regulations for their government, and have the entire control thereof. They shall be personally present as much as possible during the sessions, see that the rules, and regulations are observed and enforced, and afford such aid to the officers of the school as may be required.

The next article defines the duties of the chief working executive officer of the Institute.

ARTICLE VIII.—*Duties of the Actuary.*

SEC. 1. It shall be the duty of the actuary to attend at and take charge of the Hall of the Institute, see that it is kept in proper and comfortable order, and opened and closed at such hours as the Board of Managers or Committee on the Hall may direct. He shall have charge of the books of the Institute, and under the direction of the Board or the Finance Committee, keep them in such manner as will at all times show the exact state of the Institute's affairs, and make monthly reports of the same to the Board of Managers. He shall keep a correct record of all the

members, alphabetically arranged; receive and credit each with the amount of dues annually paid, and issue the annual tickets. He shall pay over to the Treasurer from time to time, as the Board of Managers may direct, all monies by him received. He shall also notify all committees of their appointment, and furnish the chairman of each with so much of the proceedings as relates to the object for which it was appointed. He shall also, when called upon by any of the committees, confer with them, and render them information and assistance, and perform all other duties that may be required of him by the Institute or Board of Managers.

SEC. 2. He shall give bond in the sum of five thousand dollars for the faithful performance of his duties, with two or more sureties, to be approved by the Board.

Articles IX and X provide for the passing, altering, and amending of "Rules of Order" and "By-Laws," at stated or special meeting of the Institute.

In this report the Board refer to the great depression in general business as affecting the operations and receipts of the Institute, the Annual Exhibition was again, for the third year, deferred on this account. The premiums, "three of one hundred dollars each, and four of fifty dollars each, provided by the liberality of the late George Peabody" to be awarded to the graduates of the schools of Art and Design are announced. They also state that the Institute will be handed over to their "successors with funds on hand to meet the small floating debt due, and the entire State appropriation for the year 1878, untouched."

The Institute was then in good condition to begin under the new charter.

A tribute is paid by the Board to their recently deceased late Actuary, Mr. John S. Selby, long connected with the Institute, who had, owing to advanced age, declined a re-election the year before to the post he had so long and acceptably filled.

In the summer of 1879, the great lecture hall was refitted and remodeled, new rooms were fitted up for the classes and furnished with every improvement in the way of convenience for teachers and pupils.

Before doing all this a committee visited the art institutions in the northern cities, carefully examining their methods of instruction as well as the arrangement of their study rooms, the materials provided for use in teaching, etc. Professor Woodward, who had been for many years in charge of the schools, having retired, Professor Hugh Newell, a well known artist and an instructor who had won a high reputation at the head of "The Pittsburg School of Design for Women," was called from Pittsburg and placed in charge of The Schools of the Maryland Institute. The class rooms were fitted up under his directions and supervision.

In the handsome little pamphlet with its artistic covers published by the managers of the Institute in 1879, it is announced that two lectures a month will be delivered during the fall and winter, opening with an address by President Gilman of Johns Hopkins Uni-

versity. Of these, two only have relation to art, one on "Famous Painters and Sculptors," by John L. Stoddard, Esq., with stereopticon illustrations, and one "Rambles among the Remains of Antiquity," by Geo. R. Skillman, Esq., with lantern illustrations.

In addition to the schools of art and design, a commercial department, embracing bookkeeping, is announced to open November 18, 1879, and also a school of music is announced. These are all the schools at present kept up by the Institute. Of the schools of art and design which are to open, the day school, October 6, 1879, and the night school, November 17, the following statement is made:

These schools have a threefold object: first, to diffuse a knowledge of the true principles of art more generally among the community, and especially among the working classes; secondly, to foster and direct original talent in all those branches of industry in which the raw material is worked into artistic forms, manufactured goods, or impressed with artistic designs; and, lastly, to lay a permanent foundation for a genuine school of high art in Baltimore. In their efforts to carry out these designs the managers of the Institute invoke the aid and solicit the co-operation of their fellow-citizens.

It is not alone from the new life shown in the schools that the increased energy of the managers and their broader views of their duty to the public is inferred. The publication of the report of the special committee* affords the best evidence of this. The opening pages of this report which follow set forth the purpose and plan of the report: "Mr. President: You are aware of the fact that the Board of Managers of the Maryland Institute determined in July last to remove its schools of Art and Design to more spacious and suitable apartments than those which had for years been occupied by them.

As this change of location suggested an entire reorganization in its schools of art, it was thought advisable to send a committee to visit the various art institutions of the North, for the purpose of ascertaining the object of their establishment, the manner in which they are conducted, the expense of maintaining them, and also to make a comparative examination of the different methods of instruction adopted by them."

In compliance with this resolution of the board of managers, elicited, doubtless, by a desire to avail itself of the accumulated experience of those institutions in matters connected with art education, the committee appointed by it visited and inspected most of the art institutions in Philadelphia, New York, and Boston, and submits the following report as the result of the examinations made by it:

* Report of a special committee appointed by "the Maryland Institute for the Promotion of the Mechanic Arts" to visit the schools of art and design in Philadelphia, New York, Boston, etc., by Hon. Carroll Spence, LL. D., November 3, 1879. Published by order of the Board of Managers of the Maryland Institute. Baltimore. Press of James Young, 1879, Pp. 29.

CLASSIFICATION OF SCHOOLS OF ART AND DESIGN.

The Institutes of Art in these cities may be classified under three heads—

1st. Institutions in which the Fine Arts in their highest branches are taught to amateurs, who study them as a personal accomplishment, or to those who desire to become professional artists.

2d. Schools in which Industrial Art alone, or in conjunction with Science, is taught to those who desire to avail themselves of such instruction in the various industrial pursuits in which they may embark.

3d. Institutes of Technology, in which instruction is given in Drawing and Science in connection with the various forms of handicraft and practical mechanism.

As instruction in Art similar to that given by the 1st and 2d class of schools above mentioned, is contemplated by the Maryland Institute, your committee cannot better accomplish the object of its appointment than by giving you a brief account of their origin, their management, their methods of instruction, accompanied by such remarks upon Art education as have been suggested by an examination of them.

Schools for instruction in the higher branches of the arts have existed from time immemorial. Scholars resorted to them in ancient Greece long before the Christian era, and since the sixteenth century they have flourished in almost every city of any size in Europe.

The institutions visited, and of which a brief account is given, are the "Pennsylvania Academy of Fine Arts," in Philadelphia; the "National Academy of Design" and the "Art Students' League," in New York; the "Museum of Fine Arts," Boston, for the Art Schools; while the "Cooper Union," New York, and, in the city of Philadelphia, the "Pennsylvania Museum and School of Industrial Art," the "Spring Garden Institute for Mechanics," the "Franklin Institute," and "The School of Design for Females," comprise the Schools of Industrial Art. After describing these, the report takes up the subject of instruction in Drawing in the Public Schools, and argues the importance of this industrial education as an element not only of individual but of national wealth, recounting briefly the efforts made by European countries in this direction, and then taking up the law of Massachusetts and showing its working in the Primary, Grammar, and High Schools of Boston, concluding with an account of the Massachusetts State Normal Art School, and of the reasons for its establishment. I quote the remaining pages of this valuable report in which the duty of the State of Maryland to furnish like opportunities to the scholars in its public schools is earnestly enforced. The report closes with an admirable statement of the reasons why Museums of Industrial Art should be founded; reasons as applicable to other towns and cities, as to Baltimore. These statements concerning the value of instruction in industrial drawing in all public schools; and of the worth to a community of public museums of Industrial Art, are commended to all interested in the development of artistic industries in the United States.

SCHOOLS OF TECHNOLOGY.

So much for the institutions embraced in the two first divisions in which the Art Schools visited by the committee were classified in the beginning of this report. Some of those included in the third division were also examined, but as the Maryland Institute does not contemplate a course of instruction similar to that adopted by them, it suffices to state that in these institutions of Technology, as also in those of Europe, Drawing constitutes the most prominent feature of the curriculum.

It is the key which unlocks the door to all the industries and most mechanical pursuits, and he who possesses it can enter successfully (according to the opinion of a capable judge) nine-tenths of the industrial occupations in which men engage.

Instruction in Drawing in the Public Schools of Maryland a Necessity; why?

An investigation of the great development of public sentiment favorable to Art education in the cities visited by us, as also a knowledge of what has been done and what is now being done to extend it in St. Louis, Cincinnati, Washington, Syracuse, Chicago, Cleveland, and other cities of the Union, forces the conviction upon your committee that public sentiment will soon demand of every State the inauguration of a general system of Art instruction.

Sooner or later Maryland must follow in the footsteps of Massachusetts. As it would be wise to profit by the experience of this pioneer State, your committee beg to offer two suggestions, the approval of which by the legislative authorities would, it thinks, not only obviate some of the difficulties and remove some of the obstacles which impeded the first efforts of our sister State in organizing that system of Art education in her public schools, to which at the present day 95 per cent. of her school population is indebted for a knowledge of drawing, but will also afford the students of the Industrial Arts in the city of Baltimore all the advantages and facilities of acquiring a knowledge of them as are enjoyed in the other cities of the Union.

The 1st suggestion which your committee presents to your consideration is that the State should, in anticipation of the adoption of a system of instruction in drawing in its public schools, at once take steps to train and qualify men and women to give such instruction in them.

The 2d suggestion it offers is that an effort be made by the Board of Managers to induce our municipal authorities, and our citizens engaged in industrial and manufacturing pursuits, to establish a Museum of Industrial Art in connection with the Art Schools of the Maryland Institute.

The Maryland Institute the Proper place to Train Teachers for the Public Schools of Baltimore; reasons for and manner of doing so.

From a history of the establishment of the Normal Art School in Massachusetts, furnished to you by the committee, you learn that after the passage of the law of 1870, making instruction in drawing obligatory, the great difficulty experienced in complying with its provisions arose—

1st, from the impossibility of finding a sufficient number of capable, and the necessity of employing improvised teachers.

2d, from the great expense attendant on the employment of special instructors.

The former was an almost insurmountable obstacle to a thorough and systematic course of instruction; the latter rendered the public system of Art education unpopular to many, who were taxed to pay for it. The subsequent establishment, however, of the Normal Art School, which, in a few years, presented the State with a number of capable teachers at a small expense silenced all objections, both as to the method and the cost, of public Art instruction. ©

What the Art Normal School has done for Massachusetts, the Maryland Institute proposes to do for Maryland.

For thirty years she has imparted instruction in Art and Design to the youth of our city. Her schools have been attended since their establishment by a yearly average of 417 students. The knowledge acquired in them has opened the door of a competency to thousands, who, without it, would have been forced to struggle through life deprived of the means or power to earn a livelihood for themselves or their families. Her Managers, composed principally of men who belong to that class of the community most benefited by the instruction they desire to foster; her teachers selected with especial care for the different branches of Art taught by them; her class-rooms spacious, well lighted, and furnished with all the paraphernalia of Art instruction, all designate her as the most available institute for rearing those missionaries of Art, who are destined to impart to our youth—the future artisans, mechanics and manufacturers of our State—the knowledge upon which is based that aptitude for, and skill in industrial pursuits, which, properly utilized, seldom fails to obtain an honorable maintenance for its possessor, and to contribute to the general fund of National prosperity.

A similar plan of Art education for teachers in the city public schools has been, as your committee previously stated, adopted by the city of Philadelphia. In consideration of the annual payment of \$3,000, the Philadelphia School of Design for Women receives annually ten pupils, selected from the Girls' Grammar and Art Normal Schools, who are trained to become teachers of Drawing in the public schools of that city. An appropriation for a like purpose by our legislative or municipal authorities, would not only furnish the State and city with capable instructors at a small cost, but would enable the Maryland Institute to extend the sphere of its usefulness, now somewhat circumscribed by a want of means to enlarge it.

No objection could be made to such an appropriation on the ground of its being a Gratuity, as the value of the consideration offered by it is unquestionable.

Your committee will now invite your attention to the consideration of its 2d suggestion, recommending the establishment of an Industrial Museum.

The Establishment of an Industrial Art Museum in the Maryland Institute as an adjunct to Industrial Art Education; reasons for the organization of Museums in Europe and America.

What a Gallery of paintings and statues effects for instruction in the higher branches of Art, a Museum, filled with the creations of industrial skill, accomplishes for education in the various branches of Industrial Art.

Both are valuable adjuncts to Art education in all its branches, the latter however, is invaluable in facilitating the studies of those who desire to embark in Industrial pursuits.

Genius, unaided by the experience of others, may, by its own inspirations, conduct a few favored individuals to the pinnacle of perfection in their artistic efforts; the many less favored however, and particularly those whose employment require the exercise of artistic skill, as applied to the occupations of every day life, must rely for success in a great degree upon the knowledge acquired from an inspection and study of those patterns, designs and models of handicraft upon which the taste and the ingenuity of others have been expended.

European nations, aware of this fact, have always attached schools of Industrial Art to the Museums established by them.

The German Industrial Museum in Berlin, the Museum of Art and Industry in Vienna, the Bavarian Industrial Museum in Nuremberg, the Industrial Museums in Weimar, Dresden, Cologne, Hamburg, and the Museum at South Kensington, which in the last twenty years has revolutionized most of the branches of industry

in England, were all established, not alone for the purpose of developing a taste for and encouraging a study of the fine arts, not for the purpose of cultivating Art as an accomplishment, but as an essential element in every department of industry and as a potent factor of Individual and National wealth.

The development and organization of public Museums in Boston, New York, Philadelphia, St. Louis and Chicago all indicate a growing recognition of the advantageous bearing of the collections contained in them, upon the industrial schools of art connected with them.

Baltimore alone of all the large cities opens no repository of objects of Industrial Art, to refine, instruct and give pleasure to her artisans, mechanics and manufacturers. In this respect she has been wanting in the duty she owes that portion of her population, to which she is indebted for her prosperity.

Your committee does not propose the organization of a Museum of a purely artistic character. While it does not advocate the exclusion of examples of the higher branches of Art, it would not attempt to make a collection of them. A gallery of paintings would doubtless be a useful adjunct to, but not an essential element of, an industrial Museum.

Its Gallery should comprise a collection of examples of all the Art industries, such as specimens of skilled work in the metals (iron, silver, brass, bronze), in fictile wares (pottery, porcelain, china), in sculpture (stone, wood, ivory), and also objects of ornamentation and decoration of various materials of all ages and countries, and models of architectural ornamentation of different epochs.

Surrounded by these objects, the offspring of a knowledge of practical and theoretical Art, the artisan, mechanic, manufacturer, architect, designer and decorator would breathe an atmosphere of industrial knowledge. Here lessons would be taught, which would educate the eye, train the hand, inculcate taste and expand the intellect, and which would open the door of a respectable livelihood to those who profited by them.

The establishment of such a Museum would be attended with little expense.

Museums, more than other institutions, have elicited the favorable regard of private citizens wherever they have been organized. These establishments in the United States are principally filled with objects presented or loaned by private individuals, often for an indefinite time. "Experience" (says one who can speak with authority), "has proved the doctrine, that Museums will fill themselves, provided they are formed and conducted for the public good, and have the element of permanency about them."

The Museum of South Kensington, which now contains samples of Art workmanship, the intrinsic value of which is millions, owes in part its establishment to an appropriation of \$50,000 made to it by the Parliament of England. Since that donation both Parliament and the English people, appreciating the great benefits the institution has conferred upon the nation, have vied with each other in making it the most useful institution ever organized by man to contribute to Individual and National wealth.

The Pennsylvania Museum, in the Memorial Hall, contains a collection of examples of works of art and industry valued at \$300,000, the larger portion of which are donations from, or belonging to, individuals who have loaned them for a definite or indefinite time.

The spacious rooms in the Museum of Fine Arts in Boston are filled with loans or donations from private individuals.

The same liberality extended to institutions of this kind in other cities would, doubtless be displayed by the citizens of Baltimore towards a Museum of their own.

Baltimore cannot afford to be an inactive spectator of the efforts of other cities to develop and advance the Arts of Industry. To do so would be to close her ears to the lesson taught her by the experience of other communities.

That lesson inculcates the doctrine, that no nation can attain or maintain pre-eminence in its manufacturing or mechanical industries, which neglects to extend to its youth as thorough and as systematic an education in the Industrial Arts, as is enjoyed by the youth of other countries.

Aware of this fact, may it not be hoped, that some patriotic wealthy mechanic or manufacturer, indebted for the fortune he has amassed to the skillful and tasteful labor of those employed by him, will be induced to devote a small portion of it to the establishment of a Museum, in which those lessons will be taught, which will inspire others to endeavor to attain that success in those industrial pursuits which were a source of wealth to himself.

On behalf of the committee.

CARROLL SPENCE, *Chairman*.
JAMES H. BOND,
WILLIAM H. PERKINS,
GEORGE L. McCAHAN.

The result of the tour of inspection in the remodeling of the art schools of the Institute has already been stated. The managers were not, however, content with what they had been able to do in their own institution, but proceeded to prepare a memorial* to the Legislature of Maryland, in which, after inviting the attention of the legislature to the policy of adopting—

1st. Preliminary measures to establish a systematic course of free-hand and mechanical drawing in the public schools of the State, by granting to the Maryland Institute an annual appropriation to train and educate art teachers for said schools; and

2d. To grant said Institute an appropriation for the purpose of organizing and establishing an Art Industrial Museum in connection with its schools of art and design—

they sum up the favorable opinions of American and European authorities as to the value of instruction in drawing in the public schools; they then argue the value of the development of industrial art to a commonwealth, and state the preliminary steps needed to make the requisite knowledge general; and ask that the State will employ the Institute to give the needed normal instruction in industrial art to teachers for the public schools, and also that the State will endow an industrial art museum to be in charge of the Maryland Institute, giving, as a reason, that it could be more economically established in connection with the Institute than in any other way:

1. Because there is an edifice already erected; the size and location of which make it a suitable one for that purpose.

2. Because one of the most important features of such a museum, the schools of art and design, with all the appliances of Art Education, are already established and in full operation.

3. Because it has a library of some 20,000 volumes, a most important adjunct to an Industrial Museum.

* A memorial of the Maryland Institute for the Promotion of Mechanic Arts, 1880, Pp. 26.

Here then is a suitable edifice, with two of the most important adjuncts of Industrial Art Education, ready to open its doors to such a collection of objects of Industrial Art as may be purchased for, given or loaned to it.

A small sum of money would be required to prepare the building for the reception of the articles deposited in it, and to purchase a modest collection of objects of Industrial Art as a nucleus of a larger one. This nucleus once formed it would enlarge itself. * * *

If the State of Maryland is to become, as it doubtless will, in a few years, a manufacturing State, it will be absolutely necessary for it, if it expects its industrial classes to compete with those of other States, to afford them the same facilities and opportunities of acquiring an Industrial Art education as are now enjoyed elsewhere by the same class of people.

Not to do so, would be to ignore the material welfare of a large class of the community, to which every country is, to a great degree, indebted for its national greatness and prosperity.

As this can be done at a small cost to the State, your memorialists respectfully pray your honorable body to take steps to accomplish it, by granting the Maryland Institute an appropriation to enable it to organize within the halls of the Institute an Industrial Art Museum, for the purpose of cultivating the taste, increasing the skill, and developing the happiness and prosperity of the Industrial classes of our population.

Respectfully submitted,

CARROLL SPENCE, *Chairman.*

W. H. PERKINS.

JAMES H. BOND.

JOHN M. CARTER.

SAMUEL ECCLES, JR.

G. HARLAN WILLIAMS.

The publication of these two pamphlets in Baltimore shows a great advance within the four years succeeding the Centennial Exposition at Philadelphia. At the time of that exposition there seemed, in the public schools of Baltimore, and in the minds of the public at large, to be little other idea in connection with drawing but that it was a pretty enough accomplishment; and, in fact, it was for the most part taught in the schools only as an accomplishment, and the results, one was forced to admit, hardly justified any expenditure of time or money. As a partial statement of what is now being done in some of our large cities in the way of art education, and as a succinct statement of the reasons why the introduction of drawing into the public schools ought to be urged, these two pamphlets issued by the managers of the Maryland Institute, will be found useful to those interested in urging the adoption of this important addition to the curriculum of the public schools.

Admission to membership of the Institute remains as provided in the original by-laws, with the addition of a class of female life members on payment of \$10, and that the members who were formerly admitted to the schools without payment of tuition are now required to pay tuition fees in addition.

The following extracts are from an article in the Baltimore Sun of April 22nd, 1880 :

MARYLAND INSTITUTE ANNUAL MEETING.

The annual meeting of the members of the Maryland Institute for the Promotion of the Mechanic Arts was held last evening in the main hall, Mr. James H. Bond, president, in the chair, Mr. Samuel R. Waite, secretary. The report of the board of managers, which was read, reviews at length the operations of the past year, and states that after mature consideration the committee on exhibitions have come to the conclusion that it would be inexpedient for the managers of the Institute to inaugurate an exhibition during the present year. The reorganization of the schools of art and design has necessitated such alterations in the internal arrangement of the rooms of the Institute as will hereafter render the building totally unfitted for exhibitions on a large scale. Exhibitions, the report says, hereafter should be commensurate with the growth of the industries of our city, and would consequently require a larger space for the display of the various objects necessary to make them attractive and instructive than could be obtained in the present building. An interval of two or more years between public exhibitions is advisable. The committee suggest to their successors to inaugurate an exhibition about 1882, of such size as will compare with those of some cities of the West. * * *

The report refers to the failure of the Legislature to make an appropriation in behalf of the organization of an art museum in connection with the Institute. The hope is expressed that the day is not far distant when the Legislature of our State, like that of some of our sister States, appreciating the benefits which such an institution would confer, will listen favorably to an appeal from the Institute in behalf of such an organization at the expense of the State.

NEED FOR A MANUAL TRAINING SCHOOL.

The report says: "It has been for a long time painfully evident to all reflecting persons that while the system of apprenticeships, by which a succession of skilled mechanics was secured, has become obsolete, no other system of industrial education has taken its place, and the consequence has been a deficiency of first-class workmen in almost all departments of the mechanic arts—a deficiency which has only been partly filled by the employment of foreigners, who have had better facilities for instruction at their places of birth. The fact that this evil exists, and has been tolerated so long, should not be used as an argument for its longer continuance. The old German proverb, "He who teaches not his son to work teaches him to steal," is as true as it is old. But the difficulties of teaching boys any form of honest and remunerative manual labor are at present almost insuperable. Under these circumstances it seems to be an unavoidable duty on the part of an institute founded by mechanics and supported by mechanics for the "promotion of the mechanic arts" to do something for the training of the sons of mechanics to habits of skillful labor. Fortunately the experiment has already been tried in other cities, notably in Worcester, Mass., and in St. Louis, Mo. We are thus not without some precedents for our guidance, and we hope that the committee which was appointed at the last regular meeting of the board to consider this important subject will be able soon to report a plan for the establishment of a "manual training school" for the instruction and practice of boys in the essential elements of the various branches of handicraft. * * * The Institute has about 1,500 members. The report was adopted."

MARYLAND INSTITUTE.

List of Board of Managers and Committees for 1879-80.

BOARD OF MANAGERS.

Officers.—JAMES H. BOND, President; GEORGE H. RODGERS, Vice-President; GEORGE L. McCAHAN, Secretary; EDWARD W. ROBINSON, Treasurer.

MANAGERS.

Term expires 1880.—James H. Ives, Samuel W. Regester, John L. Lawton, John H. Short, George H. Pagels, Samuel Eccles, jr., Samuel A. Ewalt.

Term expires 1881.—J. Mowton Saunders, Alex. L. Spear, Robert Ashcroft, William H. Perkins, G. Harlan Williams, M. A. Newell, Samuel R. Waite.

Term expires 1882.—John M. Carter, Carroll Spence, T. P. Perine, Joseph M. Cushing, James Pentland, George R. Skillman, James Young.

Alex. F. Lusby, Actuary and Librarian.

COMMITTEES.

Exhibition.—John M. Carter, George L. McCahan, Samuel W. Regester, George R. Skillman, Samuel R. Waite, William H. Perkins, Carroll Spence, George H. Pagels, George H. Rodgers.

Schools of Design.—Carroll Spence, Joseph M. Cushing, William H. Perkins, John L. Lawton, George L. McCahan, George H. Pagels, Robert Ashcroft.

Lectures.—M. A. Newell, Samuel R. Waite, G. Harlan Williams, James Young, Samuel Eccles, jr.

Library.—George R. Skillman, J. Mowton Saunders, James H. Bond, G. Harlan Williams, John H. Short.

Hall.—James H. Ives, Alexander L. Spear, George H. Rodgers, Robert Ashcroft, Samuel A. Ewalt.

Chemical Department.—J. Mowton Saunders, John L. Lawton, James Pentland, John H. Short, Carroll Spence.

Commercial Department.—T. P. Perine, George H. Rodgers, M. A. Newell, George L. McCahan, G. Harlan Williams.

Music.—William H. Perkins, Samuel Eccles, jr., John H. Short, Alexander L. Spear, James H. Ives.

Finance.—James H. Bond, Edward W. Robinson, George R. Skillman, William H. Perkins, Samuel Eccles, jr.

New Inventions.—George H. Pagels, John L. Lawton, Edwin Bennett, Samuel Eccles, jr., Joshua Lynch, John H. Tegmeyer, George L. McCahan, Samuel R. Waite, Thomas C. Basshor.

In the autumn of 1880 the "Committee of the Schools of Art and Design" requested their Chairman, Hon. Carroll Spence, to prepare a statement, setting forth the claims and needs of the schools of the Maryland Institute and invoking the coöperation of the citizens of Baltimore in their behalf.

A well-printed pamphlet* resulted, in which were clearly and succinctly set forth the objects of the art schools as, 1st, The "development of the Æsthetic tastes of the people;" 2d, "To give a thorough

*An Appeal to the Citizens of Baltimore in behalf of the School of Industrial Art of the Maryland Institute for the promotion of the Mechanic Arts. Baltimore, 1880. Pp. 10.

education in all necessary branches of Industrial Art;" and, 3d, "Instruction in the Fine Arts to those desiring to become professional Artists or Instructors in art." To effect these purposes classes have been organized for the study of Elementary, Architectural, Industrial, Mechanical, and Artistic Drawing. The courses of study, the rooms, the models and appliances for use, and the corps of teachers are all declared to be admirably adapted for the successful accomplishment of the objects proposed.

The reasons why the public should aid in this development are well stated, and the fact that European Nations regard "art education as a factor of national wealth" is shown; the appeal closes, with a summary of similar educational efforts, with their results, in the northern cities.

* * * Everywhere throughout the North, and in many parts of the West, people of all classes, are commencing to realize the fact that labor controlled by skill and intelligence is the sheet anchor of national wealth and prosperity.

Will the citizens of Baltimore ignore this truth, and will they remain idle and indifferent spectators of the efforts of European powers, and their sister cities, to foster those Industrial Arts from which so much happiness may accrue to the individual and so much prosperity to the State?

Under the personal Directorship of Professor Hugh Newell, aided by the active interest of the Officers and Managers of the Institute both the Night and Day schools were very prosperous.

In the Thirty-third Annual Report (April, 1881), President James H. Bond, in reviewing the years' work remarks:

When in 1879 the Managers of the Maryland Institute determined to reorganize its Art Schools and to inaugurate a new departure in its system of Art Education, much anxiety was felt by some of them, relative to the success of the Art Educational experiment then inaugurated.

As this anxiety has within the last year been completely allayed by an unprecedented increase in the number of its pupils—by a greater appreciation by the public of the objects designed to be accomplished by its schools, and by a marked improvement and progress in the work of its scholars, all of which have more than realized the expectations of the advocates of the change adopted, it may not be deemed un-instructive to cast a retrospective glance at its past Art Educational system, to dwell briefly upon its present methods and agencies of Art instruction, and to indulge in a few remarks relative to the great benefits and advantages which cannot fail to accrue to the industrial interests of our city, from the co-operation of our fellow citizens in our efforts, to develop a taste for and enlarge our sphere of Art Industrial Education.

After a succinct statement of the early efforts of the Institute President Bond remarks:

As the requirements of our Expositions, to make them successful, could not be complied with, owing to the impracticability of altering the plan of or enlarging the building of the Institute, the Managers concluded to dispense with them altogether, and to direct their energies to the inauguration of a system of Art education, which should embrace in its curriculum, every branch of industrial Art, necessary to impart a knowledge of those harmonies of Form, Color and Arrangement, essential to invest with taste and skill, the diversified products of industrial pursuits.

The tendency of artistic, like scholastic education, is to expand itself and adapt itself to the wants and requirements of the age.

This has been fully demonstrated by the great increase in the number of Art schools throughout the country, and by the adoption in all of them of a more extended system of Art Education.

Thirty years ago there were not four Public Schools in the United States organized professedly for instruction in any, but in the higher branches of Art. Not one of them was called into existence, or has been perpetuated by municipal appropriations. Neither the Public at large, nor the municipal authorities felt any interest either in their method or range of instruction.

Now, there are some thirty-five institutions, in which most of the branches of Art are taught, many of which, are recipients of State municipal aid, and some of which, have been munificently endowed by individuals, who have made most liberal provisions, not only for the development of the higher branches of Art education, but for instruction in all those arts appertaining to the material interests of mankind.

He recites the evidences of the development of public taste and of the growing demand for the products of the Art Industries, and urges the importance of recognizing these new educational needs.

Fully impressed with this idea, the managers of the Maryland Institute have within the last two years added several branches of Art instruction to those formerly taught in its schools. Instruction in mechanical, architectural, perspective, geometric and free-hand drawing, has been supplemented by instruction in design, as applicable to Textile fabrics, and Fictile wares, in decoration and painting on China, and in Sculpture. Drawing from Life and Portraiture, has been added to the course of our studies.

The facilities and conveniences of study have also been greatly multiplied, by the removal of our scholars to better lighted and more commodious and better furnished class-rooms, and by the additions of numerous antique Casts to those already in our possession. Nor have our efforts to enlarge the sphere of educational Art been unproductive of success or public approval.

Our day-schools were attended by one hundred and seventy-eight, and our night schools by two hundred and thirty-five students. As the best evidence of the appreciation by our pupils of the system of education adopted by us, there was no diminution in their number, during the sessions of our schools. The progress made by them in their studies, was both satisfactory to the school committee and their teachers. The reorganization of the schools and the success attended upon it, have attracted Public attention without the limits of our State.

He closes this part of the report with the recital of a tangible proof of the appreciation shown by the public towards the endeavors of the Managers of the Institute, as follows:

As a recognition of our well deserved and disinterested efforts to extend to our citizens the facilities and opportunities of acquiring a knowledge of Industrial Art, the Municipal Authorities of Baltimore granted us a few days ago, an Annual appropriation of three thousand dollars. This endowment will enable us to utilize our large hall for class-rooms, in which, we hope by the aid and co-operation of a generous and liberal public, to make a display of such beautiful and tasteful objects of Manufacture, Handicraft and Art as will develop public taste and afford direct instruction to those, who desire to apply the Arts to those industries, which are so closely interwoven with the texture of modern society.

If then gentlemen, an appreciation of our system of education by our pupils, if the approval of it, by the highest Art tribunal of the country—if the selection of

our school as an Art educational agency by our city authorities, are evidences of our success in the reorganization and management of our schools or are testimonials of the appreciation by the public of our Art educational efforts, surely the managers of the Institute, have every cause to congratulate themselves, that they have labored to some purpose and every reason to anticipate a brilliant art educational future for the Maryland Institute.

This, certainly, is a brilliant record.

The Hon. S. Teackle Wallis was invited to deliver the customary public address at the closing exercises of the schools in June, 1881.

Mr. Wallis, who has long been honorably identified with public movements looking to the promotion of culture and art in the city of Baltimore, and who has never lacked courage to give public utterance on fit occasion to his sense of the needs and shortcomings of the community in these respects, and to urge upon all good citizens the duty of undertaking the things that make for culture, began his remarks* by an interesting reference to the fact that thirty years before—on March 13, 1851—it had fallen to him to deliver the address on the occasion of laying the corner stone of the building in which they were then assembled. He made fitting reference to “the venerable Joshua Vansant,” the “able and energetic president of that day—happily still among us,” and paid a graceful compliment to Hon. John H. B. Latrobe, who, in 1848, delivered the opening address at the first exhibition of the Institute held in Washington Hall.

After briefly referring to the complacency they then felt over the growth of the city and to their bright hopes as to its future greatness, he thus recounts the educational instrumentalities added since that day:

PRESENT EDUCATIONAL RESOURCES OF BALTIMORE.

Nevertheless, it cannot be denied that we have provided, in one way or another, and with more or less completeness, for several of the necessities, which cried aloud for help when the Mechanics' Institute was founded.

Our admirable public school system now offers, with open hands, to the mechanical classes, as to all others, the best advantages of liberal, thorough and cheap education, within no narrow limits. The bounty of the late Mr. Peabody has given to our people, at the Institute which bears his name, one of the noblest and amplest libraries of reference which can be found within the Union. A large and beautiful collection of the best models of ancient sculpture is already on exhibition in the halls at that Institute, and its department of art, long dormant from deficiency of revenue, will soon be in condition, it is hoped, to offer some opportunities to students which the city has not hitherto afforded. Under the endowment of the late Mr. Hopkins, a university has sprung up recently among us, which is already marching to the front among the great schools of the world. Quite apart from its importance to the country and society at large, as an active and productive agent in the increase and diffusion of human knowledge, it has to us, as a community, a

*Addresses delivered at the Annual Commencement of the School of Art and Design of the Maryland Institute for the Promotion of the Mechanic Arts, June 4, 1881. Baltimore, 1881, Pp. 22 and 12.

special and double value, in the stimulus which its presence and influence have given and must give to the intellectual tastes and habits of our people. * * *

With its large resources and bountiful equipment, the University has thus provided for a want which the founders of the Institute, in their most sanguine moments, could never have hoped to meet, except in the most limited and special way. It has provided further, by its courses of free lectures, for a demand which the Institute at first endeavored to supply, but to which its restricted means soon proved unequal. The lectures at the Peabody Institute have also come liberally in aid of the same purpose. The Mechanic Institute of to-day has, therefore, the advantage of a narrower field of obligation than that which was before it when its duties were assumed. But its obligations are none the less imperative because they are fewer. Its capacity for usefulness has grown with its ability to concentrate its means and efforts, and define and simplify its aims.

For many years after its establishment, the annual fairs or exhibitions of the Institute absorbed a good deal of its energy—at first, with excellent results, but later on, without great acceptance or much evidence of practical utility."

In this review of the Institute fairs, or exhibitions, he recites the following most interesting incident, showing how the development of an artist whose life work has brought honor upon the city and his country, was influenced by the opportunity given and the encouragement extended through this exhibition:

It must be admitted that, from the beginning, the Institute was wont to travel somewhat ambitiously, in its exhibitions, into the domain of what was supposed to be "high art." The results, for the most part, it is no unkindness now to say, were, perhaps, more entertaining than instructive. I may be permitted, however, to recall an incident, not altogether without interest and value in its way, which shows that these little ostentations were in the right direction and sometimes bore good fruit.

AN ACCOUNT OF THE DISCOVERY OF AN ARTIST.

In November, 1851, the new hall of the Institute, in which we are, was already sufficiently completed for the holding of the yearly exhibition. It was then the largest edifice in the whole country which was devoted exclusively to the advancement of the mechanic arts. Under the impulse of the warm and energetic feeling which had caused its erection, the first exhibition held in it was so great and genuine a success that it may well be remembered with pride. Among the objects presented—"deposited," it was called—were a large number which had been benevolently classified, in the catalogue, under the head of "The Fine Arts." Of the committee of judges on that class I had the undeserved honor to be chairman. While considering, with mingled wonder and despair, the multitude of hopeless aspirations after immortality, in paint and canvas, with which they had to deal kindly, the committee had their attention attracted and their minds relieved by a singular-looking little contribution, which was humble enough in its pretensions and appeared to have been shelved, in the back-ground, by some one, who no doubt honestly regarded that as the proper place for it. Upon examination, we found that it was a copy, or rather an imitation, in bas-relief, of a well-known picture by Teniers. The material, as well as I remember, was the building marble of Baltimore county, and the entire work comprised frame as well as picture, in one piece. Although the treatment was not very skilful, and the material did not lend much attraction to the sculptor's modest effort, it required but a glance to see that the longing and the aspiration of the artist were there, and that there was promise of a name and a future in the touch of the untrained hand. Upon inquiry, we found

that it was the work of a young and unknown mechanic in the city, a journeyman stone-cutter, who was altogether without artistic education or the means of acquiring it. It was not in the power of the committee to do more than encourage the ambition which the Institute had no means of fostering, but we did our best, by rendering the judgment which I take leave to read you, from the contemporary records of the Institute.

"No. 801. The work, which, in our judgment, possesses the highest degree of artistic excellence, among those admitted to competition, is the *has-relief*, in marble, from Teniers' 'Smokers,' cut and deposited by Mr. William H. Rinehart. The committee consider the artist as entitled to the most favorable notice and the highest award."

Immediately following, on the record, is the action of the Committee on Awards:

"801. William H. Rinehart, at Mr. Baughman's, for a *basso-relievo* in marble from Teniers' 'Smokers,' gold medal."

I had not the honor of a personal acquaintance with Mr. Rinehart until long after, when he was at the height of his reputation, and as near the zenith of his delightful genius as life permitted him to reach. It was after he had returned to his home, in 1872, to erect at Annapolis, under a commission from his native State, his noble statue of our great Chief-Justice. Circumstances threw me into close relations with him, which soon led to cordial friendship, and in the freedom of our intercourse I one day said to him, that we had been acquaintances longer than he knew. When I gave him the explanation, which he asked, he manifested the deepest sensibility, and told me, with much emotion, that it was impossible for me fully to appreciate the influence of the simple incident which I recalled, upon his hopes and his career. It was, he said, the earliest public recognition and of his right to believe that there was something in him, and he owed more than he could express, to the pride and encouragement it gave him, in his poverty and toil. I confess that, ever since, I have ceased to think of the "fine arts" of the older Institute, with the levity which they once inspired. Whole acres of bad canvas were worth enduring—nay, even worth exhibiting—for the sake of that one tender shoot of genius, watered in its struggle with the clods.

The visitor to the halls of the Peabody Institute now finds, a marble statue "The Clytie," made by this quondam stone-cutter's apprentice, prized as one of their choicest treasures; while a large memorial gallery is given up to the plaster models of other works by the dead artist; noble records of a life of art production. The incident just recorded gives much food for reflection;—the artistic nature needs appreciation as flowers need sunlight;—such an incident, showing the accident by which this artist got this needed stimulus, is suggestive of how often it may be missed and so the individual and the country may fail of due development through lack of like opportunity. Elementary drawing taught in all public schools would largely diminish this risk, for strong native art tendencies could hardly fail of manifestation and the budding genius once recognized find opportunity of growth.

Mr. Wallis then proceeds to assert the need of providing facilities for thorough instruction in art as follows:

And this brings me to the more practical considerations which belong to the present occasion, and which I trust you will pardon my delay in reaching.

ART SCHOOLS A NECESSITY.

In the allusions which have just been made to the art exhibitions of the Institute in former years, it has, of course, been as far as possible from my purpose or disposition, to disparage such displays when made under proper conditions. But art, without school and teaching, is in all its forms the most baseless of fabrics, and the necessity of labor, which is the first lesson to be taught, brings with it, as its universal concomitant, the obligation to wait. To offer general encouragement to the display of crude and uneducated effort, is perhaps the most effective method, in most cases, of stifling what might be talent, by submerging it in the pleasant and perfumed waters of self-satisfaction. Nothing need be said, I am sure, of the effect which is likely to be produced upon the unformed artistic tastes of a community, by the distribution of prizes which must go, for lack of better, to works which have their only merit from comparison with others that are worse. It was not, however, for want of good intentions, or of knowing how they should be carried out, that the Institute failed, for so many years, in this part of its purposes. Teachers and schools are not, in all respects at least, like those exquisite plants we know of, which blossom and are fragrant on no better diet than the air. It is idle and absurd to calculate upon producing noteworthy results in art education, or in education of any sort, with scanty means. There must be good and abundant models, and all sufficient materials and appliances, in the hands of competent teachers, who are paid what their ability and usefulness deserve, so that they may dedicate their whole time and talents to their work, and do it with all their might. Individual poverty, of course, can only do the best it may, but public institutions, which assume a duty to the public and are expected to discharge it can not live upon half rations. It is our duty, as we all know, and it makes us better, to pray and be thankful for our daily bread; but a sad heart and a weary mind must come from always thinking of it. And so it is, with institutions like that with which we are concerned to-night. If gentlemen are willing, as their officers, to give time and service, without reward, to the public interests which they promote, it is the duty of the public to meet them half way. They ought not to be hampered by inadequate resources, or disheartened by the vain effort to accomplish their work with only half the necessary tools. Their teachers, I repeat, should be liberally, and in all contingencies fairly, provided for. Their pupils should be tempted to labor and learn, by all the facilities and appliances which make such labor a delight and give to it speed and progress. They should never, for an instant, be kept down from excellence, by lack of example or of guidance, or of help to reach it. Neither officer nor teacher nor pupil should have his hands tied or even hindered, in his work, by mean economies. It is because the Institute has never been thus favored—or, to speak more properly because, in this regard, it has never been fairly dealt with—that it has fallen so far short, from time to time, in the attainment of what was hoped from it by its founders.

It is in view of this, that the admirable exhibition which we are now closing is so much a marvel, and that all to whom we owe it are so much entitled to the thanks of the community. I call it admirable, not for the sake of saying a pleasant and a kindly thing, for I should have no right to say it here, even as a compliment, unless it were deserved. It is not that the works exhibited are perfect, or pretend to be. It is not so much that the order of their excellence is high, although the merit of many of them is undoubtedly remarkable. It is that study and care and progress are visible in almost all of them, and conspicuous and striking in many. It is that they afford indisputable proof of thorough and skilful teaching, and excellent and general capacity to learn. It is impossible, I think, for any man, with an intelligent appreciation of such things, to have examined the specimens exhibited, without having his interest in the Institute deepened and his desire to serve it

cited. And these specimens, too, are not "deposits"—as in former days—the efforts of ambitious exhibitors. They are the school's own daily, actual work, as it comes from the hands of its pupils. They are the showing of what two years have done for it, under many disadvantages, and of how much more and better it could do if its hands were strengthened as they should be.

The speaker passed to the consideration of the recent development of artistic tastes and of the trained skill now demanded of workers in all the arts and industries and asks:

Can we let our people go untaught of the arts of construction and design, when all the sister communities with which we rank ourselves are straining every nerve to teach them? Are the mechanic arts so small an element in our prosperity, that we can safely let them run or rust in the wornout grooves of thirty years ago? When the demand all around us is for skilled workmen, are we to settle down to workmen without skill? Are the people who are born to the necessity of labor, to be furnished with no means of lightening and refining it?

After describing the value of training in art industries for its influence in brightening the lives of the workers, as well as in adding to the productive wealth of the community, he thus portrays the situation in Baltimore at that time, owing to the lack of many of the indispensable aids to education if the youth of the city were to be properly trained to be workers in art and artistic industries:

Individual help may serve in individual cases, it is true, but a large and public need can only be supplied by public effort and the public hand.

Now, what has this community attempted in that direction? Macaulay reports Sir William Maule as wont to say, that "private schools make poor creatures and public schools sad dogs." But what of no schools at all?

PAINFUL LACK OF ART TRAINING SCHOOLS IN BALTIMORE.

In this city of ours and this year of grace, there is not one single public academy of art, of any sort, except that within whose almost naked walls we are. The elementary instruction in drawing, which is given in our public schools, is necessarily limited, and a large portion of the pupils are compelled to leave them, at an early age, as the report of the commissioners explains, in order to learn trades for their future support. There is no public institution where mechanical, or architectural, or decorative drawing, or drawing or modeling from nature or from casts, is pretended to be thoroughly taught, and especially to adults. That there is no place of public instruction in the use of colors, in water or in oil, goes without saying. In fact, the want of sufficient and capable teachers is as conspicuous and natural, as the want of encouragement and occupation for them. The ladies of the Decorative Art Society, with commendable zeal and excellent success, have done their best in the good work, but they stand almost entirely alone within their limited sphere. The great mass of the wealth and influence of the community keeps aloof and gives no help. I will not ask whether this is creditable. Is it tolerable? But for the recent grant of a small annual appropriation, by the wise liberality of our municipal government, the means for the late display by the Institute—the means, indeed, of making that display possible—would not have been within its reach. Successful as this has been—standing as the Institute does, among the largest organizations of its class in the country, both as to the number of its pupils and the extent of its work—it is painful to contemplate the scanty resources by which the ability and energy of its officers and teachers have been held in check. One almost blushes, to see the small array of borrowed and battered casts to which the pupils have been confined, in drawing

and modeling after the antique. Of objects of art, which would instruct their eyes and keep alive and stimulate their perception and sense of beauty in form and color, there are none to speak of. There is little or nothing to create the atmosphere, in which only art can draw its freest breath. Nor is this all. Of the day pupils there are comparatively few, of the class who live entirely by their own labor. The necessity of supporting themselves keeps constantly away large numbers of female pupils, to whom the school would be most desirable and useful, and to whom night attendance is not permissible. In looking at the excellent and promising work of the night classes, it is touching, to any one of sensibility, to think that the young men who have produced it have done so, at the expense of their rest and recreation, after long days of toil for bread. What a benevolence it would be, on the part of any man who could afford it, to lay the foundation of a fund, by which the more promising and poorer of these young men and women might be assisted, while they learned what the Institute could teach them.

A MUSEUM OF INDUSTRIAL ART NEEDED.

How much of gratitude a rich man would deserve, not only from the institution and its pupils, but from every man and woman in our limits, if he would endow a museum of industrial art, connected with the Institute—a standing exposition of the capabilities and methods and triumphs of skilled and educated labor! In all the leading European nations, and in many States and cities of America, these collections are the noblest and most effective effort of the last quarter of a century, in the application of art to industry. The museum is treated as the necessary adjunct of the school, and together they teach not only the artisan, the artist, and the citizen, but the teachers more than all. In the ample and admirable report of a special committee appointed by this Institute, and in a memorial addressed by its managers to the General Assembly of Maryland at its last session, this subject is treated with a fullness and intelligence which leave nothing to be said; and I could wish that some of those who have the means to gratify the impressive suggestions of those able papers, would take the thing manfully to heart.

After an appeal to the wealthy mechanics and merchants of the city to establish and endow institutions capable of giving such training he closes with an appeal for the establishment, also, of a high class technical mechanical school:

It has long been my own conviction, that one of the most direful needs of education, in this State, is the establishment of a technical school for scientific, mechanical instruction. There is absolutely nothing of the sort upon the soil of Maryland—a blot upon the intellectual and, indeed, the business record of a community, whose productive and mechanical capacity is so large and varied as our own. The class for whom such instruction is needed are the very class who cannot afford to seek it at a distance, and, except out of Maryland, no Maryland man can find it. Every one, who is at all familiar with the subject, knows that in all the large enterprises where mechanical agencies are needed, the demand is now for mechanics—not only skilled, but thoroughly and scientifically educated. The so-called “practical man”—whose knowledge is simply empirical, and whose facts lie isolated in a vacuum—is being pushed fast to the wall. He is a victim of the survival of the fittest. Our mechanics are at a sad disadvantage, from the absence of opportunity to qualify themselves for this new order of things. An honorable and lucrative profession, which may well be classed among those best deserving the appellation of “learned,” is thus practically closed to a large number of the most vigorous intellects of our State. I have heard with great satisfaction, that it is proposed to convert the ancient foundation of St. John’s College, at Annapolis, into a technological school. But,

as that depends upon the legislative will, and as the ways of legislatures are in the depths of the sea—and often in many other depths—I look upon this project with more of hope than of confidence. A liberal private endowment of such a department, in connection with the Maryland Institute, would fill up the measure of its already exceeding usefulness, while it liberated the mechanical education of our people from the caprices of the General Assembly. As the Masons said, when the corner stone was laid—“So mote it be!”

Not only by reason of its historical interest in this connection, have such copious extracts been taken from this address, but also because of the admirable statement it embodies—by no means of necessity limited to the city of Baltimore, or to the State of Maryland—showing the importance to the community of making ample provision for the artistic and technical industrial education of its youth.

Not the smallest of the many services rendered to the public by the Maryland Institute must be reckoned the series of remarkable public addresses delivered before it on like occasions.

Mr. Wallis was followed by Mr. Skipwith Wilmer, who addressed the graduating class.

From this interesting address the following passages are taken:

The title of this Institute proclaims its object—the promotion of the Mechanic Arts—that, I take it, is Art in its relation to the practical wants of life. We have no school in Baltimore devoted exclusively to instruction in the fine arts. The munificence of one man has given us a Conservatory of Music, and the Peabody Institute is here, in the person of its distinguished representative, to extend its encouragement and bestow its prizes upon the pupils of its older sister, but the formative arts are taught no where in Baltimore but here.

The greatest living writer on this subject has said, that “the entire validity of art depends upon its being either full of truth or full of use; and however pleasant, wonderful or impressive it may be in itself, it must yet be of inferior kind, and tend to deeper inferiority, unless it has clearly one of these main objects—either to state a true thing, or to adorn a serviceable one. It must never exist alone—never in itself—it exists rightly only when it is the means of knowledge or the grace of agency for life.” Measured by this standard—and I know no better one—in the loftiness of its aims, I think we can claim the Maryland Institute as a School of Art in its highest sense, devoted alike to Truth and Serviceableness. * * * *

NEW DEMANDS FOR ARTISTIC PRODUCTIONS.

Without seeking further for the causes, it is certain that there is now in this country a desire and an appreciation for artistic work such as has never been known before. In every industry—in every factory and workshop, there is need for men and women to supply this new demand. We want them to draw the illustrations for our books and papers, and then to engrave them. We want patterns for our carpets and paper for our walls—designs for metal work and textile fabrics. Shapes for our china and decorations with which to adorn it. Architects for our houses, our churches and our halls. Landscape gardeners and mechanical engineers—designers for carriages, for furniture, for silver and glass—and then we want skillful mechanics to make all these things. All this is art work and should be of the best and truest.

The graduates of this Institute are to go out hence as the ministers of this highest art; to carry the lessons of truth and serviceableness throughout our city, or wherever their paths may lead them. Art's true home is not in galleries of paintings and

sculpture any more than that of religion is in our churches. It should be found in our streets, our shops and at our firesides. * * *

It is not necessary, in order to help on this revival, that we should attempt great things. We can do little things, from great motives, for beauty like wisdom, "is oft times nearer when we stoop than when we soar;" and truth and serviceableness can be taught in a thousand ways. * * *

Whether then the art you shall pursue be Truth or Serviceableness your work is before you, and within your reach.

To those of us who believe in popular education, such an institution as this is of immeasurable value. A certain amount of education is needed as a measure of police for the preservation of good order in the community; but our public schools do not stop with that. We take care that if there be boys and girls of exceptional ability their talents shall not be wasted for want of means for development. After they have passed through the highest schools, if they have real ability, they can go on alone. Why should we not do as much for those whose talents lie in the direction of artistic or mechanical skill? The world needs them as much as the others, and the supply is less abundant.

Just as the mountains that are piled in their picturesque beauty upon our Western border hide a store of wealth that man's toil must uncover; just as beneath the waters of the beautiful Chesapeake, there is food for millions which man's industry must secure, so among the multitudes that people this great city, there is a wealth of undeveloped talent that we cannot afford to waste.

His pertinent conclusion is applicable to the whole country.

The Thirty-Fourth Annual Report (April 19, 1882) of the Board of Managers devotes much space to a recital of the unsuccessful efforts made to secure the continuance of the annual exhibitions, which have for several years outgrown the once sufficiently capacious halls of the Institute, while the greater development of the drawing classes compels the permanent occupation of all the available room in the building.

The plan proposed is to secure the erection of buildings in the suburbs of the city for exhibition uses. The temporary omission of the exhibitions and of the once popular courses of lectures is an indication rather of a change in the direction than of any lessening of effort on the part of the managers. At present the Art Schools of the Institute absorb most of their attention.

Of these the report says:

INCREASING IMPORTANCE OF THE ART SCHOOLS OF THE INSTITUTE.

If the usefulness of the Institute seems to be waning in one direction it is amply compensated by the growing dimensions and importance of its schools of Art and Design. Not only is the circle of their influence constantly widening through the increased attendance of pupils, but the higher plan of their teachings is making that influence felt in new directions.

The crowded condition of the Day School Class rooms last year, together with the certainty that there would be an increase in the number of pupils this year, made it all-important that adequate accommodations should be provided for them. Every available room was already occupied and only the main Hall offered itself as a resource. The question of occupying it by the School was a delicate one, and required mature deliberation. On the one hand was the fact that the revenues from its rental for purposes of amusement though decreased of late years, contributed largely in

defraying the expenses of the Institute. Unless some new resource could be opened up it seemed suicidal to shut off this one. On the other hand it was equally undeniable that the schools were crippled for want of sufficient room. * * * *

At this juncture the City Council was appealed to and passed an ordinance giving the Institute \$3,000 a year in consideration of its teaching a specified number of pupils named each year for a course of three years by the Council—60 the first year and 30 each year thereafter. This measure of relief solved the difficulty and steps were taken as soon as possible to place in the Hall the appliances necessary to the purposes of the school. It was found to be admirably suited to this end. It has been fitted up with movable screens at a very moderate expense and is now one of the finest apartments for the study of Art in the country. Many new studies have been added including a number of specimens of ornamental work in textile fabrics, wall paper &c, presented by dealers in those goods. The resources of the school might be very largely increased, and the nucleus of an Industrial Art Museum formed, if there were a more general contribution by dealers in ornamental Industrial wares.

It is in the direction of Industrial Art that the new departure of the Institute has largely taken place. The beautiful original designs on pottery and textile fabrics, and wall paper &c, which its students have produced show that Art is never so much Art as when engrafted on the useful. We look forward to the near future when the creative faculty fostered and developed in our schools will be sought by manufacturers who are now compelled to send from home for designs for their goods. The coming June exhibition of the work of the pupils will thoroughly exemplify these statements.

190 Pupils have been in attendance during the season. The sessions of the Night Schools were attended by a largely increased number of pupils, all of whom have evinced a creditable desire to apply themselves to their work. The teachers are thoroughly competent for their duties and have proved themselves zealous in the exercise of them.

The length of the session was increased from four to five months and has proved eminently satisfactory. New and much needed studies have been purchased by the Mechanical and Architectural classes, and the work done by them as well as by the artistic class is of a high order of merit. Many persons have visited the schools and have been surprised and delighted with the character of the work.

338 pupils were in attendance upon the night classes. The schools are under the charge of Mr. Hugh Newell with three assistants in the Day Schools and six assistants in the Night Schools.

While it is confidently believed that these schools will continue to obtain Legislative aid, it would be more satisfactory to know that their future career was assured beyond peradventure. At present their scope is contracted within the limited means at their command, but they possess latent possibilities of higher attainments that a more extended liberality such as might be vouchsafed by some of our wealthy private citizens would develop and assure. The hope is cherished that a School of Technology may yet be founded at the Institute.

The Expenses of the School were.....	\$5,118.56
The receipts of the School were.....	3,475.34

Bal. against the Department.....	1,643.22
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On the occasion of the Annual Commencement of the Schools of Art and Design held Friday, June 2, 1882, addresses were delivered by Hon. Bradley T. Johnson, A. Leo Knott, Esq., and John M. Carter, Esq. These are published in a well printed pamphlet,* for

* "Addresses delivered at the Annual Commencement of the Schools of Art and Design of the Maryland Institute, June, 1882. Baltimore, 1882—Pp. 34."

the managers of the Maryland Institute make a wise use of the printing press and afford every facility to the public for obtaining information as to their work. Mr. Johnson's subject was "the School and the Shop," and was a plea for "combining with the education of the intellect the equal training of the eye, the hand, and the faculty of taste," the last, that is, the recognition of the fact that taste is a faculty to be developed and educated, being a point often ignored by those who plead for industrial education, and yet, if the main purpose is to develop artistic industries, it is by no means the least essential of our needs.

The address begins with an historical summary of the mediæval guilds which took upon themselves the training of apprentices, then, after rapidly sketching the causes of the decay of apprenticeship, instances the State of Belgium as of about equal area with Maryland, but with five times the population. Belgium has so directed the education of her people as to substitute for the discarded system of apprenticeship such successful training as to make the country one of the most successful manufacturing countries of the world. "The source of the power and production of Belgium is the skill, the taste, and the culture of her artisans. Those qualities are developed by her system of education, which provides for the full and equal cultivation of all parts of man's nature: his intellect, his hands, his eye, his ear, his touch, and his senses. I propose that we construct a Maryland system as far superior to the Belgium system, as our climate, soil, institutions, and people are superior to those of Belgium."

The present system of public school training in the United States is then reviewed at length and criticised as deficient, because of its failure to provide the means and training for developing the industrial and productive faculties of the child, while, by contrast, the efforts of European nations for technical education are depicted and the following brief account of a Parisian Industrial School is given:

The industrial schools of France, and of Paris especially, year by year send out a trained force of skilled and cultured workmen who have long placed French manufactures for taste and elegance before all the world. *The Ecole Municipale d'Apprentis* furnishes a fair type of what can easily be done in Baltimore. It instructs three hundred pupils in a course of three or four years. The buildings and furniture have cost the city of Paris \$150,000, and the annual expense for working it is \$12,000.

The education is gratuitous. It receives lads of thirteen, and after three or four years training, turns them out workmen who can command there from five to eight dollars per week, which is equivalent to from ten to sixteen dollars a week here.

A public school, organized in Baltimore, which would every year so train and educate one hundred youths, that at the age of seventeen they could readily and constantly command wages of from ten to sixteen dollars per week, would, I think, be a greater benefaction than some other undertakings which fill a large space in the public eye. At the *Ecole Municipale d'Apprentis*, five hours a day are given to

the school; six hours a day to the work of the shops. In the school room, beside the usual routine, mechanics, physics, chemistry and technology are taught, while drawing and modelling occupy a prominent place.

There are two principal workshops, one for workers in iron, the other for workers in wood.

The trades actually taught are forging metal, turning, fitting, carpentry, wood-turning and pattern-making. During the first year, the apprentice takes his turn of a fortnight at each of the six trades taught. He is thus acquiring general knowledge and skill. In the second year, he settles down to serious application to the trade he selects for himself.

I have explained the operation of the Ecole Municipale d'Apprentis in detail, for I propose to refer to it again for a special purpose.

Then the speaker makes application of his long array of facts and statistics and closes with an eloquent picture of the possibilities for industrial development and consequent prosperity open to the State and the city; and certainly no American who believes in the energy and aptitude of his own countrymen and who knows anything of the wonderful results of intelligent technical training, can consider his picture as overdrawn. What may be possible to Maryland is equally within the achievement of every other American community.

The following are the closing pages of this address:

But I claim, that it is easy, without attempting technical training in our school system, without trying to instruct iron-workers, wood-workers or kindred trades there, to provide for such general industrial education as will fit the pupil to go from the common school to the superior training school for instruction in his special art of trade.

First of all, drawing ought to be as elementary a part of common school education as writing. Drawing is the supplement of writing. It is the short-hand of modern intelligence. A sketch made in a few minutes will be a better description and convey a better idea of the thing described than a written statement of pages. The use of tools for working in wood and metal, and of clay for modelling, can be as well taught as gymnastics or the modern fashion of calisthenics. Engraving and wood-carving would be the supplements to the others, and other methods of training the hand and the eye, and cultivating the taste, could as readily be introduced. Now if the time at present taken up by our school studies were equally divided between the school and the shop, the consequences would at once ensue. The book studies would be more thorough and better appreciated. The shop-work would train the other faculties and fit the scholar for any manual occupation his taste or necessity might impel him to follow.

This system of common schools would only do for primary instruction. By the time the scholar attains the age of thirteen or fourteen, he should have the opportunity of applying himself to the special pursuit, to which his fortune would probably lead him. The literary and scientific professions are amply provided for with High Schools and Academies and Colleges. The industrial pursuits are absolutely without any facilities for preparatory training.

A POLYTECHNIC SCHOOL NEEDED.

What we want here in Maryland, and in Baltimore, is one great Polytechnic school of the mechanic arts, where workmen can be educated in letters, instructed in science and trained in manual skill, so as to fix a standard for all other similar schools in the State. The Maryland Institute furnishes the foundation on which

such a school can be built, the germ from which it naturally can be evolved. It already furnishes special instruction in fine art and applied mechanics. It requires but to have its sphere enlarged to do all that the Ecole Municipale d'Apprentis of Paris does, and more and better. It can furnish teachers of drawing for every common school in the State. It can instruct engravers on wood and metal, and train skilled workmen, and supply all the wants of a great city and flourishing State in that regard. To do this it requires public sympathy and support. I believe it will do its work better, and will be more efficient if it can be organized without municipal or State aid. An appropriation from the City Council implies some mixture of the City Councilman, and I have never observed that he improved any literary, scientific or moral undertaking with which he intermeddled himself. I would prefer, if possible, to do without the appropriation with the councilman. But public support and sympathy are necessary.

The Higher Commercial and Silk Weaving School of Lyons is under the special patronage of the Chamber of Commerce of Lyons.

The Higher Commercial School of Marseilles is under the patronage of the Chamber of Commerce of that city.

Now, why cannot the Chamber of Commerce; the Board of Trade; the Merchants and Manufacturers Association of Baltimore; undertake to establish the Maryland Institute for the promotion of the Mechanic Arts on such a basis, that it can be made the school for special industrial education for this city and State and the country. The commercial bodies and corporations are the governing powers of the cities. They have taken the place of the old guilds of artisans. The real force of the community is expressed and directed by them. The local government only performs such functions as public sentiment permits, and they mould public sentiment. Therefore, it is the duty of these great corporations to take charge of this enterprise, and to unite in placing Baltimore foremost in the world in promoting the highest education in the highest meaning of education. The possibilities of this city are marvellous.

CONTRAST BETWEEN BALTIMORE AND FLORENCE, ITALY.

Florence, with 110,000 inhabitants, had an annual income of \$3,000,000; the manufacturers of wool alone employed 200 factories and 30,000 workmen. Eighty banks conducted the trade of Italy and of Europe. She levied armies, waged war and made peace. She was the centre and the focus of learning, of art, of taste and of skill. She was a republic of traders and bankers, of merchants and mechanics. Her shopkeepers stepped from their shops into the highest offices of the State; whether to administer domestic affairs, or to confer as ambassadors with foreign powers in foreign courts, and their work done and duty performed, they returned to the avocations of their daily lives. Such was the life and power of a city not half the size of Baltimore. We have certainly 400,000 people—that is before the police census. That shows an annual increase of about 54,000, so that what may be our population now, I do not know.

We have a bay more beautiful than the Adriatic, and a climate more generous than that of Tuscany. We have trade facilities of which Florence could not dream, and the power of machinery and capital, beyond the anticipation of her philosophers, Baltimore can put three times as many men in the field; can concentrate ten times the amount of money; can do one thousand times the amount of labor that Florence could. Institutions evolve themselves; men and women are but the product of their environment.

The shores of the Chesapeake are developing generation by generation, a race that will be the equal of any Roman or Tuscan breed. The force of will and of brain, the power of muscle and of bone, the beauty of form and color, as shown for a century, give assurance of a remarkable future.

Now with these facts, and I believe they will not be gainsaid, I again press the importance of forming our own Maryland institutions without copying Belgium or France, Old or New England. We are sufficient for ourselves. We certainly can construct a system of public instruction best suited to the genius and wants of our people. We can have a system of primary schools in which the cultivation of the intellect and the training of the hand and eye shall receive equal attention.

Over them we can have industrial schools which will afford special training in arts and trades, and here in Baltimore we will have, as the crown and flower of our Maryland system, a Polytechnic School, far in advance of the Ecole Municipale d'Apprentis of Paris—or the Federal Polytechnic School of Zurich, with its pupils gathered from all the quarters of the earth. This great school of arts and sciences ought to be an expansion of the system of the Maryland Institute.

It ought to be under the patronage of the people of Baltimore as represented in their great trade corporations. It ought to afford gratuitous instruction to every Maryland boy and girl in the principal arts and trades, and it ought to be the centre from which our cultured skill shall hereafter radiate to beautify, to improve, and to strengthen our society.

The address to the graduating class was delivered by Mr. Knott, who, in his opening sentences, paid a graceful tribute to the late Mr. Samuel Smith, his former instructor in linear and perspective drawing. Mr. Smith was “the first professor in the Maryland Institute of that invaluable and indispensable branch of all art education.”

The speaker attributed the improvement in the architecture of the city, and the increase of the beauty of the interior decoration of its houses, so noticeable during the past few years, as largely due to the “correct knowledge and just views on these subjects which this Institute, through its schools, its libraries, its courses of lectures, and its exhibitions, has disseminated among us.”

He gave, in the course of a very interesting and philosophical consideration of the origin and province of art in the development of civilization, the following rapid sketch of the rise and progress of modern industrial art:

THE ORIGIN OF MODERN INDUSTRIAL ART.

It was Christianity that in presenting to the world as its Redeemer, as the object of its imitation, its reverence and supreme homage, the foster son of the carpenter, gave a dignity to labor it never possessed before.

Modern industrial art had its birth in the middle ages, and under the immediate consecration of religion. The convents and monasteries were the first schools in which it was taught, their inmates the first artists and artisans of modern times. In these they worked with indefatigable assiduity, producing articles in every department of industry of rare beauty of design and workmanship.

In the South Kensington Museum, in London, has been gathered and preserved, at great cost a collection of specimens of the work of these early art schools, to serve as models of taste and excellence to the British workman and manufacturer of the present day. In the art-hand books published by this famous institution they are described as marvels of faithful industry and consummate artistic skill. The very first school of professedly art industry was that established in 691 by St. Eloi or Elgidius, Archbishop of Sens and Minister to Dagobert 1st, of France, in the Abbey of Tournai. Here he himself, laying aside the dignities of Church and State, often

worked with his episcopal hands at the benches with his monks, teaching them the theory and practice of art as applied to industry in every branch of metal and enamel work.

The Abbey of St. Denis, founded by Suger, Archbishop of Paris, in the twelfth century, was another of these art schools renowned throughout Europe during many centuries for the extent and magnitude of its workshops, the multitude of its workmen and the variety and beauty of their productions. Thousands of young men from every part of France, indeed from every quarter of Europe, resorted thither to accomplish themselves in the art and mystery of their respective trades. To the Parisian workman this institution is said to have given that fertility in invention, and skill and delicacy of manipulation, which have characterized him ever since, and have secured for his productions, in many departments of industry, the preference of the world.

Institutions of a like character and purpose, and of a similar origin and foundation, rapidly spread throughout Europe. Around them speedily gathered busy populations. These were organized into towns. From towns they gradually grew into large cities, having municipal governments of their own; the great hives of art and industry, of the arts in general, the homes of comfort and elegance, the sanctuaries of religion, civilization and liberty, during these rude and warlike times. For to the stout hearts and strong arms of the busy artisans who gradually filled them, Europe is indebted not only for the arts and industry which have civilized her, but for what of freedom she possesses, continually asserted as it was by these artisans, with firmness and courage against king and baron alike.

But art not only imparts beauty to the productions of industry, but in adding as it does a positive element of value it becomes a creator of wealth to individuals and nations. As individuals and nations become more and more cultivated and refined, beauty of form and finish becomes more and more an object of desire, and men seek and demand its impress on what they purchase. Those things which have it will, other things being equal, command the preference. The eye naturally seeks the gratification of that sense of beauty of which it is the organ.

This fact in the commercial world England found out to her cost. The independence of the colonies, followed by the wars with Napoleon, freed the markets of the world from the monopoly she had so long enjoyed in most of them. Her manufactures, left to their own merits, began to decline. The finer products of her looms, her forges, her potteries, compelled to come in free competition with those of other nations, notably of France and Holland, were driven out of market after market. The remote cause of this decline is to be found in the past.

EFFECTS OF PURITAN ICONOCLASM IN GREAT BRITAIN.

In the sixteenth century a mistaken zeal had proclaimed a crusade against art and art productions. In England and Scotland this iconoclastic war was waged with peculiar and destructive fury. The arts were outlawed and fled beyond seas, taking refuge in France, in the Netherlands and parts of Germany. They found a precarious sanctuary in a few noble houses here and there, but thenceforth they ceased to exercise any sensible influence on the life or the work of the masses of the people. What was the consequence? The British workman, having nothing before him to excite his sense of the beautiful, to arouse his emulation, to chasten his taste or improve his skill, in time fell behind his brethren in other countries in every department of industry in which art entered as an element. His work had all the qualities of usefulness and solidity, but it lacked that of taste. His hand had lost its cunning in imparting to that work the impress of beauty; for the models were not before his eye, and the ideals were not therefore in his mind. The lines in which Wordsworth describes and laments the lost sense of the beautiful in the peasant of

his day, aptly expresses the almost blank condition of the mind and soul of the English artisan on that point, during a century and a half.

"A primrose by the river's brim,
A yellow primrose was to him,
And it was nothing more."

His inferiority in this respect gradually dawned upon him. It was conspicuously and painfully apparent at the World's Fair of 1851. * * *

After briefly recounting the story of South Kensington and the strenuous attempt by the Government and people of Great Britain to develop art education, he says:

Her efforts to repair the neglect and indifference of ages has cost England millions, but she has found her profit in it; she has found that art pays. She can now boast that she has the most thorough and complete system of national art education in the world. The number of art students in these schools in 1874 was 281,400, and the works of art produced by them in the three years that elapsed from 1871 to 1874, amounted in number to 157,636.

It is this grand army of art students, and instructed and skilled artisans, working in every department of her multifarious industry, that has reconquered for her her position as the first commercial nation of the world; has restored to her not only her lost markets, but has enabled her to beat her lately victorious rivals on their own ground. In France from 1856 to 1868 the value of exports of articles of art manufacture fell off nearly twenty per cent. * * *

STRENUOUS EFFORTS BY EUROPEAN NATIONS TO TRAIN ART WORKERS.

France has realized that great truth, the recognition of which is so useful to men and nations, that not to go forward is to go backward. Her republican statesmen are making strenuous efforts, by the establishment of new methods, and the improvement of old methods of art culture and instruction, to recover lost ground, to restore to her her ancient supremacy as the mistress of nations in art manufactures and art production. Belgium and Spain, Holland and Italy are also at work on the same line and in the same direction. Old schools of art industry are being revived, new ones created. In each of these countries the subject of technical art has been placed under the control of a special department of the government.

While all the civilized and commercial nations of the world are thus alive to the necessity and importance to the commercial value of art education, we are doing almost next to nothing. * * * We can no longer as a nation pose as the Cornelian mother, and pointing to the sewing machine and the McCormick reaper, say, "these are our jewels." Even with these the world may become satiated and cry "hold, enough." We must greatly increase and widely vary our manufacturing industry; and we must stamp on its productions the marks of taste and beauty to give them currency and circulation in our own markets, and in the markets of the world. To accomplish this we want no advantage or blessing of nature; the fault in this respect is "in ourselves, that we are underlings." * * *

What we need is the skilled labor, the artistic touch, the trained eye and hand. These can only come from a well sustained system of art-education; from schools of art and design, like this of the Maryland Institute.

The Thirty-fifth Annual Report (April 1883) of the Board of Managers, signed by Mr. Samuel W. Regester, president, opens with a recital of efforts, as yet unsuccessful, to combine with others for the continuance of public annual exhibitions.

After stating the causes that forced the Institute to give up the exhibitions and expressing their willingness to coöperate with any

other citizens in the effort to inaugurate similar annual exhibitions elsewhere, in or near the city, the report says :

If what was once considered the very highest obligation of the Institute seems threatened with decay by reason of there being no longer a field for the exercise of its duties within the limits of its present facilities, the rapid strides made by the school of Art and Design towards the perfect accomplishment of the large aims of its promoters may be looked upon as an indication that the true destiny of the Institute is to be worked out on educational lines, and particularly those which lie in the domain of art and its relation to industrial pursuits.

Although what was thought to be ample provision was made a few years ago for the accommodation of pupils in the night Schools, the season just closed witnessed such an accession to the numbers of the year before, that it was necessary to provide another large room at the south end of the building for their reception.

These accessions were very largely to the mechanical and architectural classes, the former of which contained 128 and the latter 81 pupils. 257 pupils attended the preparatory free-hand and artistic classes, making a sum total of 456 pupils. Nine assistant teachers are employed in instructing the various classes. The discipline is thorough and the conveniences and facilities are as good as the best schools of its kind.

The examination of the work of the scholars has not yet been concluded, and it is therefore not possible to say at present how many graduates there will be.

The commencement exercises will take place as usual.

The progress made by the Day Schools for the few past years has been remarkable. Three years ago there were but 35 pupils in the schools and the third floor front of the building was ample for their accommodation; now they number 216, and in addition to the room already mentioned, the entire first floor of the Institute, with the exception of the Library, is required for the purposes of the school, and even these ample accommodations have been severely taxed this year.

The curriculum embraces instruction in elementary, free hand and model drawing, in water colors, india-ink and pastel, oil painting, landscape and portrait painting, decoration and ornamentation of china, and designs for paper and textile fabrics.

The elementary classes are more than usually full, and this may no doubt be referred to the earnest desire of the students to ground themselves thoroughly in the elements of art before attempting more ambitious work. The classes in higher drawing and painting are also very full, and the character of the work in these departments is of a very high order of merit. What is especially noteworthy, is the constant and untiring attendance of the pupils upon their studies. The schools are open every day from 9 a. m. to 2 p. m., and it may safely be said that the proportion of those who attend every day is very large in reference to the whole number.

A free Exhibition of the work of the pupils of both schools, lasting several days, will be given at the Institute early in June.

The schools are under the direction of Mr. Hugh Newell.

Receipts were.....	\$3, 672. 15
Expenses.....	5, 806. 39

While the cost of the Drawing schools exceeds by some \$2,000 their receipts, the total income of the Institute, from all sources, shows a very satisfactory annual excess of income over expenditures, varying from \$1,000 to \$2,000. The Library now numbers 20,000 volumes. The opening of the recently founded "Enoch Pratt Free Library" will, it is anticipated, prove detrimental to the prosperity of that of the Institute, but the community will thereby be the gainer, as the

new library possesses the means of unlimited growth and the efforts of the Institute, no longer needed in this work, can be turned into other channels.

The customary public addresses before the schools were delivered, June 1, 1883, by Charles J. Bonaparte, Esq., and Joseph M. Cushing, Esq.

The opening address by Mr. Bonaparte, in which the usefulness and claim to public support of the schools of the Institute are clearly stated, has a curious interest to one accustomed to the conception of the free public school systems which prevails throughout the free North and West. The speaker, who possibly in this but expresses the general opinion of the community in which he lives and to whom his words are spoken, has no hesitation in saying that the public schools are intended for the poor and only for the poor,* that, in short, it is fraudulent for the children of other than poor parents to attend them!

One accustomed to the Northern idea of public education—which, so far from being thought a matter of charity, is regarded as a debt, always due, by the community to all its children—can readily imagine the reception that would be given to the utterance of the sentiments embodied in Mr. Bonaparte's remarks, if addressed to the cultivated audiences assembled to honor the graduating exercises of any of the noble public schools of the cities of Boston, or New York, or Brooklyn; or in the schools of any of the prosperous villages and towns of the New England States, or of the great States of the North and West; where the public schools are regarded as belonging to the whole people and are open to all, rich as well as poor, as of right! The spirit of this address, in so far as it assumes that the children of mechanics are always themselves to be mechanics, that the children of the poor are always to be poor themselves, seems strangely *un-American*, when, for example, one recalls how many of the descendants of a Connecticut shoemaker—who was a power in the land and chosen by his State as a Senator of the United States in the first Congress, and who was never ashamed of his leather apron—are found, to-day, filling the highest places of honor and power in this great Republic; while the marble effigy of their distinguished ancestor stands in the halls of the national Capitol, still representing there his native State.

It was a company of hard handed farmers that, in Lexington, a century ago, "fired the shot heard round the world." The life of Benjamin Franklin, printer, and the story of Abraham Lincoln, President, teach something other than any doctrine of fixed classes!

* "It is the duty of a father to pay for his children's education, if he can, and in no wise the business of the State to help him evade that duty. But while our schools are intended for the poor and for the poor only, they have been modeled upon schools that exist for classes that can advance no just claim to charity." See page 18, Maryland Institute Report, 1883.

Something of concession to the idea here advanced by Mr. Bonaparte, concerning free public schools, and to its logical conclusion that the education given in them should be only that of the most limited and elementary character, seems, also, to underlie the remarks by another speaker, already elsewhere quoted in this Report as delivered at Paterson, N. J.*

If the new movement to add to the curriculum of public school studies elementary training in drawing and in the industrial arts, is to result in the dissemination and adoption of any such belief in the essential inequality of human beings, then it will have wrought more injury to the manhood of Americans than can be compensated by any excellence of manual dexterity. A Republic needs "men," not "hands," for its citizens. It was when referring to another phase of this same idea that all citizens are not equally entitled to the same educational opportunities, that the manly indignation of the late President Felton, of Harvard College, burst forth as, in delivering the opening address of the lecture course of the Lynn Lyceum, in 1852, he spoke of one uttering such sentiments as one who "cherishes in his heart a system in more deadly antagonism to the rights of the people than the most absolute despotism in Europe or farthest Asia; for it presupposes, not a community of equal men, but a hierarchy of fixed and unchangeable ranks; it assumes that the poor man's son inherits his poverty together with his name, that the son of the mechanic must follow in his father's footsteps, sending down a legacy of toil from age to age. * * Can anything be less true to American doctrine than this?"

The main argument of Mr. Bonaparte is based on this fundamental idea that the public school is only intended for the children of people too poor to pay for their education; his arguments—that these children ought to be so taught at school as to be fitted for useful industry, are pertinent; their fallacy lies in his proposition to limit the advantages of this careful training to the children of the poor; for, in fact, it happens that, in this country of rapid fluctuations of fortunes, it is the children of the wealthy parents who may be in quite as much need of being so trained at school as to be able to engage in useful industries, as are the children of the poor; the wealthy here, possessing even less of permanence than do the poor.

It seems strange, in view of the wonderful success of the American idea of the right of all human beings to free and full development, that any American citizens should have failed to learn the lesson. The need that school children should be taught useful learning is quite as important as Mr. Bonaparte affirms; but, not merely because those school children are, or, as he thinks ought to be, all children of paupers.

The ground on which the free public education of all youth by

the State is based and can be defended, is the need of the State, the vital need of a Republic, that all its citizens shall be intelligent; not the necessities of individual parents! The experience of centuries has shown that the great business of educating the whole people can be intrusted to no class, or caste, or sect. No church is good enough, no class wise enough, no parents wealthy enough. The State, which embodies the combined power, wealth, intelligence, of the community, is alone equal to the mighty undertaking.

However, in addressing the pupils of the evening drawing schools of the Institute on this occasion, Mr. Bonaparte was speaking to those who attend for the definite purpose of acquiring practical knowledge of the industrial arts, and to an audience who are familiar with the character and purposes of the Institute, which are to give that practical training in the mechanic arts which is nowhere else provided.

Premising that all Baltimoreans are sufficiently familiar with the work of the Institute to allow the omission of any formal statement of its work, the speaker says:

* * * I am justified in asking you to consider not the merits of this particular school of the Mechanical Arts, but the relations which such schools should bear to the general scheme of American popular education, and their claims upon the discerning liberality of individual benefactors and the fostering care of the State. I must premise, however, that the function of this and similar Institutes, whose importance to the community I would see more clearly recognized, is not that of advancing the fine arts in their stricter sense. What they do for these is eminently meritorious, but it is not because they train or encourage technical artists that I deem them an important and unduly neglected element in our system of education. After all, painting and sculpture are luxuries, and it is scarcely the business of charity or the State to provide luxuries; the people must be given their bread, that is to say, must be taught how to earn it, before we think of pleasures, however innocent or elevating, which can be those of a minority only.

The importance to the public of these schools arises from the fact expressed in the title of our Institute, that they are devoted to the *mechanical* arts; that their pupils are the children of artisans, learning to be better artisans themselves, not deserting but improving, the profession of their fathers, and that they aim to make the various forms of manual labor at once more scientific and more attractive. They should not be classed with the scientific schools attached to our leading universities, or the polytechnic schools or institutes of technology existing in several of the Northern States. These form part of a system of higher education, presuppose a collegiate instruction in their pupils, and aim to fit them for callings to which no one can fairly deny the rank of the learned professions.

The schools to which I refer, and among which the Maryland Institute holds an honorable place, graduate not metallurgists, or chemists, or civil engineers, but carpenters, masons, smiths, machinists, bringing to their respective handicrafts the improved methods of modern enlightenment, and substituting for the merely empirical skill gained by a tedious apprenticeship, a rational knowledge, the fruit of scientific instruction. Such schools as these are not numerous in the United States; they have been comparatively neglected by private benefactors, and have almost wholly failed to obtain recognition by the State; yet they seem to me the indispensable complement, and, in a certain sense, the correction of our entire system of elementary and secondary instruction. The public schools of the United States are a subject of profound interest to the people. I think I am on safe

ground when I say that we spend of the proceeds of taxation upon our primary and grammar schools several times the amount similarly expended by the most liberal of the great European nations, and very nearly as much as all of these together; and I would not have this immense outlay diminished. What a community pays for the judicious training of its future citizens is for it the most fruitful of investments; but there is good reason to question whether we are getting the most we can for our money in this respect, whether, in fact, the organization of our schools does not involve an error in principle which both hampers their influence for good and procures us some gratuitous evils.

Then follow the arguments, just referred to as based upon the statement that public schools should be only provided for the children of the poor; with an elaborate denial of the correctness of the idea of the equality of men!

In closing, he urges the value of such industrial and technical schools as are these of the Institute, of which the community has all too few; and eloquently portrays and justly eulogizes the worth and influence of an education which, at the same time, gives skill to the hand and joy to the heart of the worker; thus making the labor of his life its chief solace.

He closes, with an admirable statement of the claims of the Institute to the sympathy and support of the community, as follows:

One of these schools is in our midst, founded by our fellow citizens, and appealing to our sympathies for its support. The particular aspect of its utility upon which I have dwelt this evening by no means constitutes its only claim to our regard. To many the more strictly artistic features of its instruction may seem more important, as they are certainly more immediately attractive. But if it did no more than to train to perfection and contentment in their life work the hundreds of pupils who nightly attend its classes, this alone should ensure it the amplest measure of moral and material support from our citizens. To those who would give of their abundance for the needs of their less happy brethren, it appeals with a force which can be equaled by few, if any, of the many agencies of organized benevolence around us. Certainly nowhere could money be given with a more absolute assurance that it could not fail to do good.

But the Institute claims of us more than money. We owe its managers gratitude for their sacrifices of time and thought in our behalf. We owe its teachers a recognition of their untiring and ill-remunerative labors for our good. We owe its pupils our appreciation of their efforts to serve the community by improving themselves. Finally, we owe ourselves the proof that we know and feel its merits, and that we are worthy to possess so good a thing. To fulfill these obligations are we met this evening, and it remains for me but to express my own sense of your kindness in permitting me to so long delay the more interesting exercises that are to follow.

The following characteristic sentences are taken from the stirring address by Mr. Cushing on behalf of the Commercial School of the Institute. Character and thoroughness are equally important to students in the drawing classes as to those studying bookkeeping, and Mr. Cushing's words are worthy the consideration of educators, as well as pupils.

The quality most needed in American thought, education, institutions, business, and work is thoroughness. We Americans worship the superficial; we are enamored of shams; we deride as slow and old fogy the careful methods of the past; we

wish everything done with a rush and a hurrah, and in consequence we do few things as well as they ought to be done. * * *

In our trades we refuse apprentices and insist that good and bad workmen shall be paid the same wages, and so our bricks are bad, our mortar crumbly, our hearths supported on wooden blocks, and our new rows of houses old before they are finished; our plumbers are the standard themes for newspaper jests. * * *

FALSE STANDARDS OF LIFE.

The greed for wealth has overcome us all, and we forget the value of character while our eyes are dazzled by the gilded prizes of life.

If we would but pause and think that before God and the inner thought of honest men, men must be judged by what they are and not by what they have, by the honest work they have done, and not by the dollars they have amassed. If we would but think that many rich and many mighty will appear meagre and small before the omniscient eye, we would each in our sphere give credit to character rather than wealth, to brains more than to dollars, to honesty more than to success. It is sad to plead so hopeless a cause.

It seems useless to give such good advice that the experience of life will prove so bad.

It is almost impossible, even in this community, to preach the doctrine I now utter without a myriad of examples, thronging the memory of every hearer, to prove the fallacy of all I say. And yet it must be said, for it is true. Honesty and a conscience void of offense before God and man is better than wealth, and the man who knows his business thoroughly and honestly pursues it, who pays his debts, votes his convictions and dies poor, leaves a richer legacy in his character to his children brought up by him to honest thorough work, than the man who merely by accident or by chicanery is able to bequeath wealth for an ignorant, diseased and profligate posterity to squander in riotous living. * * *

OPPORTUNITY FOR TRUE CHARITY.

If there be a rich man among you who remembers the struggles and despairs of his early life, when a word of kindly counsel, an hour of good advice, a little pecuniary help in time of utmost need would have been to him like a bright light in a dark and lonely place; this Maryland Institute offers to him an opportunity to help many struggling boys and to imprint his name among the benefactors of his race. We are striving to help honest people to make an honest living by doing thorough work. God bless the man who lends his wealth to make this help effective.

INFLUENCE OF ACCURATE BOOK-KEEPING ON CHARACTER.

The study of arithmetic and book-keeping has a conservative and steadying effect upon the youthful mind.

It tends to make a boy keep accurate accounts of his expenditures and receipts, and may often help to stop him ere he crosses the narrow margin which separates the spendthrift from the thief. It teaches him accuracy and also informs him that no statement is true wherein there is an error of one cent, and this often prevents the imaginative boy from degenerating into the habitual liar. It may save a boy from the careless expenditure that so easily leads to stealing and forging. The counting of his cash may lead him to shake off the companion who beguiles into the road that leads to death.

Boys are not naturally mean nor dishonest. They become so because they form habits of expenditure beyond their means. Prevent those habits being formed, and you save the boy. * * *

We wish to teach all the boys we can teach such habits of thorough methodical work, that honest constant work may become the habit of their lives, and by this habit save them from some of the evil that is in the world.

At the close of the season 1883-'84, Mr. Hugh Newell, whose duties in connection with the Johns Hopkins University, where he was in charge of the department of drawing, had increased and who desired to give more time to the personal practice of his art than was possible if he retained charge of the Institute schools, voluntarily resigned his position as head master of the schools of art of the Maryland Institute.

Under his care these schools have been very prosperous and the managers were anxious that in the change the schools should lose nothing of the advance already secured.

In obtaining the services of Professor Otto Fuchs, who, as "acting principal," succeeded Walter Smith in charge of the Massachusetts Normal Art School, as principal of these schools, and of Professor S. Herbert Adams, a graduate of the Massachusetts Normal Art School, as assistant, they have been most fortunate. The announcement of the new departure of the schools was made in the circular issued in the autumn of 1883, and will be given at the close of the account of the schools.

OFFICERS OF THE MARYLAND INSTITUTE, 1883-'84.

BOARD OF MANAGERS.

Officers.—F. C. LATROBE, President; JOS. M. CUSHING, Vice President; GEORGE L. MCCAHAN, Secretary; EDWARD W. ROBINSON, Treasurer.

MANAGERS.

Term expires 1884.—Alex. L. Spear, William H. Perkins, G. Harlan Williams, M. A. Newell, Samuel R. Waite, Joshua Lynch.

Term expires 1885.—John M. Carter, Carroll Spence, T. P. Perine, Joseph M. Cushing, James Pentland, George R. Skillman, James Young.

Term expires 1886.—Samuel W. Regester, John L. Lawton, John H. Short, George H. Pagels, Samuel Eccles, jr., James H. Bond, Robert K. Martin.

Alex. F. Lusby, *Actuary and Librarian.*

COMMITTEES.

Exhibition.—Jno. M. Carter, *Chairman*, George L. McCahan, G. Harlan Williams, George R. Skillman, Samuel R. Waite, William H. Perkins, Robert K. Martin, George H. Pagels, John L. Lawton.

Schools of Art.—James H. Bond, *Chairman*, William H. Perkins, John M. Carter, John L. Lawton, George L. McCahan, George H. Pagels, Robert K. Martin.

Lectures.—M. A. Newell, *Chairman*, James H. Bond, G. Harlan Williams, John M. Carter, James Pentland.

Hall.—Alex. L. Spear, *Chairman*, Samuel R. Waite, John L. Lawton, Robert K. Martin.

Chemical Department.—John L. Lawton, *Chairman*, James Pentland, John H. Short, M. A. Newell, Joshua Lynch.

Commercial Department.—T. P. Perine, *Chairman*, James Young, M. A. Newell, George L. McCahan, G. Harlan Williams.

Music.—William H. Perkins, *Chairman*, Samuel Eccles, jr., John H. Short, Alexander L. Spear, George L. McCahan.

Finance.—F. C. Latrobe, *Chairman*, Samuel W. Register, Edward W. Robinson, Joseph M. Cushing, G. Harlan Williams.

This history of the Institute was here closed, having been brought down to the end of the session of 1883-'84, in the expectation that the present volume of this report would be issued simultaneously with Part I; the two volumes, or "parts," having been then completed in manuscript. It happened, however, as elsewhere stated, that Part II could not then be issued; and, as this portion of the second volume is now being put in type (September, 1888), this history will now be resumed and brought down to the present time.

A remarkable and increasingly successful development of the schools has gone on under the direction of the new principal, cordially aided and sustained by the managers and for the past three years, under the vigorous administration of Joseph M. Cushing, Esq., who has been continued in the Presidency and who, by reason of its growing usefulness to the public, has been successful in securing from both the State and city, increased appropriations in aid of the maintenance and support of the Institute.

The account of these four years of its development, the most successful and the most promising in its long history, will be mostly given in extracts from the annual reports, addresses, and other authorized publications by the Officers, Instructors, and Board of Managers.

The following is the report made by the President for the year ending April 23, 1884.*

The Thirty-sixth Annual Report of the Maryland Institute is herewith submitted to the members. Although the scope of the Institute is now somewhat abridged from what it originally aspired to, yet its usefulness is really increased by a concentration of its energies, and the advance which has been made in the instruction now given in its most useful department, viz: its Schools of Art and Design. With this object, the management has exerted itself to provide an Institution in Baltimore where the advantages to be obtained in Instruction in Mechanical, Architectural and Artistic Drawing, in fact, in thorough Art training, will be equal to those offered by any similar Institution in the country. The necessity for such Schools is fully recognized in all large cities, and many of them have been greatly aided by public and individual contributions.

Already the reputation of the Maryland Institute is recognized abroad; and, with one of its Diplomas, a graduate has little difficulty in obtaining lucrative employment. At the beginning of the year, the resignation of Professor Hugh Newell, the former Principal of the Schools of Art and Design, necessitated the selection of his successor. In this, the management was most successful in obtaining the services of Professor Otto Fuchs, late Director of the Massachusetts Normal Art School in Boston; and among his assistants, Professor S. Herbert Adams and Miss Emma J.

*Maryland Institute for the Promotion of the Mechanic Arts. Thirty-sixth Annual Report, 1884. Pp. 8.

Gay, both graduates of the Boston School, and both thoroughly competent and efficient teachers. It is therefore believed that the Maryland Institute, with its present corps of Professors and Assistants, now offers facilities equal to any that may be obtained elsewhere for thorough Art Instruction.

ATTENDANCE ON THE SCHOOLS.

That these advantages are appreciated is shown by the fact that the present Day School consists of 226, and the Night School of 507 pupils. The report of the Committee on the Schools of Art and Design states that "of the 507 pupils the classes are divided as follows: Free-hand, 253; Mechanical, 149; Architectural, 105, from which it will be observed that a majority have been engaged in the pursuit of branches of education adapted to actual technical training, and which, with many of the students, has been pursued simultaneously with active service in those industries to which such training applies.

When it is considered that no other Institution in our city, except the Manual Training School, just inaugurated, and which is only available for young pupils still occupied with academic studies, presents this opportunity, the value of this feature in our Night School can be justly appreciated; two hundred and fifty-four (254) pupils engaged during the day in learning or practicing various branches of mechanical industry; and in our Night Schools acquiring an education which raises them above the standard of their fellows, and makes them skilled workmen, acquainted with the *rationale* of their calling.

To this number may be added the 253 pupils in the Free-hand class, every one of whom is being made proficient in the art of drawing and designing, and thus fitted for artistic work in the numerous branches of industry where such a knowledge is valuable."

NEW FEATURES OF INSTRUCTION INTRODUCED.

A feature of the Day School is the *Saturday Class*, composed of pupils engaged in other studies during the week, who most willingly sacrifice their holiday for Art Instruction. Another feature in the Day School is the large number of pupils who, instead of pursuing some special course of training in branches of their own selection, have entered upon the "Regular Course" which embraces a period of three years, and involves a thorough course of instruction in all the various branches of Art and Design. This is the system pursued in the Massachusetts Normal Art School, and is intended to fit the pupils for teachers of Free-hand, Mechanical and Architectural Drawing, as well as Painting in Oil and Water Colors, Modeling in Clay, etc.. etc.; the result of this will be to supply our city and State with competent teachers in these most useful branches of education."

Instruction in "time sketching" has also been introduced by Professor Fuchs with great success. A class is exercised in time sketching in Charcoal, Water, and even Oil Colors, from casts, still life and life. When finished, the sketches are collected, criticised and marked by the teachers, then arranged before the class, their merits and defects pointed out, and such comments made upon the work as may be timely and instructive for the future exercises. Some of the two and four hour sketches already accomplished are most excellent productions.

REPORT BY THE COMMITTEE ON THE SCHOOLS.

The report of this committee informs us that the graduates in the Night School number 2 in the Free-hand class, 7 in the Mechanical class, and 6 in the Architectural class—total, 15. To this number might be added several others, who have voluntarily declined to be graduated this year, preferring to return another season and continue their studies to a higher degree of proficiency.

The Day School will continue in operation until the 1st of June proximo; but the Night School closed on the 14th March, after a session of 61 evenings, attended by the pupils with commendable regularity and promptness. A Free Exhibition of the work of the pupils of both Schools will be given at the Institute early in June.

The report of the committee on the Commercial Department states that "while the number of pupils was not as large as the year before, the progress made by them in their studies, and the general condition of the school, as well as the results thereof, were very satisfactory and encouraging. The methods employed are well adapted, to the ends sought after, and justify the expectation of more important attainments in the immediate future. There will be five graduates of this Department."

The Library of the Institute is still frequented by a large number of readers, and the effort of the committee having charge of it has been to use their limited resources in supplying such standard literature as will prove attractive and instructive to the pupils of its Schools. The total number of volumes now on its shelves is 20,224. The Reading Room furnishes the standard papers and periodicals to readers.

The usual appropriations for the benefit of the Institute have been made by both State and city, thus showing the appreciation by the public of its value, and although its usefulness is somewhat limited by its resources, the members have good reason to congratulate themselves on its success during the past year.

Respectfully submitted.

FERDINAND C. LATROBE,
President.

The summary of receipts and expenses show a deficit of nearly \$7,000, between the receipts and expenses of the Day and Night Art Schools, the total cost of which amounted to \$10,814.86. The total expenses including the Commercial School and the Library amounted to \$14,208.26, but the total receipts for the year exceeded this by \$430.23.

A separate pamphlet report of the schools by Professor Fuchs dated June 3, 1884,* was issued. This had three pages of illustrations; copies of pupils' work in Free-hand, Architectural, and Machine Drawing.

REPORT BY PROFESSOR OTTO FUCHS.

BALTIMORE, June 3rd, 1884.

To the Chairman and Committee on Schools of Art and Design of the Maryland Institute.

GENTLEMEN: In presenting to you my first Annual Report at the close of the first year of my connection with the Institute Art Schools, it gives me pleasure to state that although many changes have been made in the corps of instructors, methods of teaching and character of the work throughout the School, the progress made thus far in every department is all that could be expected or desired. As the full course in the day as well as in the night Schools covers a period of three years, one only having as yet elapsed, it is of course too early to look for a complete development of the whole scheme which we have started to inaugurate; the regular students in both day and evening classes, however, have prospered in their work so

* Maryland Institute, Schools of Art and Design. Report of Professor Otto Fuchs, Principal, June 3, 1884, Baltimore, Md. Pp. 12.

well that the results up to this time are fully up to my most sanguine expectations. The uniform excellence of the work in all departments speaks as well for the adaptability of the system, as for the earnestness and industry of the students.

The elementary classes especially are in a most promising condition, and I can say with confidence that the students are well grounded in the rudiments of industrial art and thoroughly prepared to begin their advanced studies at the opening of the next term in the fall. A large amount of excellent work was executed also by students of the advanced classes, who deserve much credit for the zeal and enthusiasm with which they have pursued their studies. It is especially gratifying to witness the increasing interest and devotion to their work after the first difficulties have been overcome and their ability to do, if heart and hand work earnestly together, made manifest by their success and steady progress in the field of art.

The first visible testimony of the practical value of the handicraft training our students have received this year, are the designs for ornamental jugs from several of our class A students, which were accepted and are already put upon the market, manufactured by Messrs. D. F. Haynes & Co., of this city.

The curriculum as laid down in the catalogue of the school has been carried out as nearly as it was possible, in fact almost in its entirety, and will require but slight modifications for next year's course.

The attendance in all the classes has been generally good, and every available room in the building fully occupied.

The statistics of classes and attendance are here omitted as they are given in the preceding report by President Latrobe.

By the present arrangement of classes and studies, the Maryland Institute offers to young people of both sexes who possess the requisite talent and desire to engage as either artists or artisans in any of our manufacturing industries, the opportunity at almost nominal expense, to obtain a broad and thorough art education, and to young men employed in whatever capacity in mechanical or technical pursuits, advantages they cannot afford to neglect, for there is no branch of industry in which a thorough knowledge of drawing is not a most valuable aid for the skillful performance of handiwork in execution and design.

The details of studies, etc., which follow, will be given in the subsequent account of the several classes. The following which closes the report of the Day School is interesting for its bearing on the kind of drawing which it is proper to attempt in the public schools, and its utter condemnation of "drawing from the flat" which, before the coming of Walter Smith, was the usual definition of the term "drawing."

The Saturday class consisted of the ten advanced students in drawing and painting, several of whom are teachers in the city schools, and thirty-seven children and youths of both sexes, ranging between 7 and 17 years. Drawing from objects was also introduced in this class to the exclusion of copying, with the most gratifying and satisfactory results, even the smallest children found no great difficulty in delineating the forms of simple objects placed before them. It is an undeniable fact that such practice is far more instructive and educational than simply copying drawings from the flat; the child in drawing from an object learns to understand the relation and proportions of lines in objects and how to represent the same on paper, thus the eye, the mind and hand are made to act together, and the children manifested the greatest interest in this kind of work; there is nothing in the education of a child that tends more strongly to develop the powers of observation and quicken the perceptive faculties than studying nature.

As the study of mankind is man, so the study of nature is,—to study it.

The second part of Professor Fuchs' report relates to the Night Schools, the details will be given elsewhere. If the reader is familiar with the discussion in Massachusetts in reference to these classes, as summarized in Part I, of this Report, it will be readily seen that this teacher who had great experience in such a school in South Boston, Massachusetts, is thoroughly convinced as to the need of regularity and continuance of attendance by the pupils in these night classes; since, otherwise, there can be no effective grading of pupils and no definite progressive advance. Irregular attendance with its consequences led to the comparative failure of many early attempts at Mechanics' evening drawing classes. Bringing them under the discipline considered essential in all other schools has been attended with a wonderful improvement, wherever the experiment has been fairly tried.

Professor Fuchs brought to the schools of the Institute the methods which had been thoroughly proved by Walter Smith and himself, and his subsequent success, brilliant as it has been, is only the logical result of his insisting on thorough and persistent work by the pupils, whether in the night, or the day schools. This lesson is equally valuable in public or private institutions. It is the one essential requisite for excellence in any field of mental or manual industry.

Of the kind of drawing taught, he says:

* * * In the works of the first and second year classes of the free-hand division may be noticed entire absence of ambitious attempts at drawing pretty pictures, such as heads, ornaments, flowers, etc., usually drawn from flat copies; and it is well that these should be conspicuous by their absence. To copy drawings simply without studying truth of form and color and light and shade effects from nature is childish amusement but not art; a certain amount of technique may be learned by copying it is true; this however can be practiced by all at home without a teacher; the School of Art and Industrial Design has a more important mission to fulfill, which is: to teach young men the underlying principles of true art and originality in design, something that will be of practical value to those whose occupation requires skill and taste, as well as that originality in their ideas they need to make them producers, and not merely copying machines for duplicating other people's work.

I think that by careful study of the courses which are fairly illustrated by the work on exhibition, it will be found that our aim is primarily to teach our pupils in the night schools industrial drawing, original construction and designing rather than imitating or mere picture making.

He then shows the need of providing suitable and abundant models of machines to serve as object lessons.

* * * Having now a true and perfect record of every student in the school, both as to regularity in attendance and proficiency, it will be easy to classify them when they re-enter next term, so as to begin with all the classes uniformly graded and thereby insure more thorough and systematic progress.

I have every reason to believe, that the majority of our pupils are greatly interested in their work, appreciating thoroughly the advantages of knowledge and skill in drawing in their various occupations, or to prepare them for a future field of

usefulness. While everything was done last fall to increase the efficiency of the Maryland Institute Industrial Drawing Schools, and it is not overstated when I say they rank now with the best in the country, I must call attention to the fact, that we are greatly in need of models, especially in the mechanical and architectural classes, and no efforts should be spared to secure this most valuable, nay indispensable aid to teachers in demonstrating and pupils in understanding clearly the relation of drawings to the objects which they represent. One of the most important and instructive features in technical schools is to take the students into shops and public works, there to explain the practical operation of that which is taught in theory in the school; but as this is impossible for us to do with our evening school, we must have models to place before our pupils to teach them practical building and machine construction and I appeal to whomsoever it may be, who has the means and feels that interest in popular industrial education which the importance of the cause deserves, to generously aid the large number of industrious and ambitious youth of Baltimore, who zealously devote their winter evenings to learning what they need to make them skilful artisans, by donating the models and studies which we need so much and hitherto have been obliged to do without. * * *

In closing he thus refers to the public exhibition of the work of the pupils and describes the illustrations given in his report.

The work of the year is now on exhibition at the Institute for your examination and public inspection, and I append hereto three specimen drawings, photo-lithographic fac similes of students' work, reduced to about one-fourth their original size.

No. 1, head from the antique, certificate drawing in class B, day school.

No. 2, original design of a brick building, certificate drawing in third year Architectural evening class.

No. 3, elevation of a horizontal steam engine, third year mechanical evening class.

Faithfully yours,

OTTO FUCHS, *Principal*.

The usual commencement exercises took place at Masonic Temple, on the evening of June 3rd, 1884, President Daniel C. Gilman, of Johns Hopkins University delivered the annual address; contrary to custom this was not published by the Institute, the speaker retaining his manuscript for other uses. It was entitled "Handicraft," and treated of "The education of the hand" and of the value of technical industrial training. It was published, subsequently, for the author, and it is believed to be substantially repeated as No. 1, in the "Series of Monographs" issued by the Industrial Education Association of New York. Professor Fuchs read the report of the schools already quoted from. Hon. Wm. A. Fisher, Judge of the Supreme Bench of Baltimore City, addressed the graduates. President Latrobe conferred the diplomas and Mr. Morison, Provost of The Peabody Institute, delivered the Peabody Premiums to the successful prize scholars. The annual exhibition of pupils' work was shown in the Institute for three days, June 4th, 5th, and 6th.

The annual report of the managers for the succeeding year shows that the activities of the Institute are becoming more and more centred in the schools as the following extracts show:

BALTIMORE, April 14, 1885.

To the Membership of the Maryland Institute.

GENTLEMEN: The thirty-seventh annual report of the Board of Managers is herewith submitted. Although, as said in the last report, the scope of the Institute is now more concentrated than was contemplated by its founders, yet its usefulness to the community is in no wise curtailed—for while it has given up some of its classes in scientific branches, as well as the annual industrial exhibitions, it has so improved the methods of instruction, and raised the standard of studies in its Schools of Art and Design, embracing, as these Schools do, a thorough system of Art Training in Mechanical, Architectural and Artistic Drawing, that they now offer to the citizens of Baltimore advantages in this connection fully equal to those obtainable in any city in this country. This success is in a measure due to the good fortune of the Board in securing the services of Professor Otto Fuchs, with those of his able and efficient assistants—Professor S. Herbert Adams and Miss Emma J. Gay. The good work done in these Schools of the Maryland Institute is now fully recognized in other states, as was shown by the fact that at the meeting of the National Educational Association in Madison, Wis., what was sent by our pupils was very favorably commended for excellency in a competition with exhibits from all the prominent schools in the country. Our Schools are well patronized, thus indicating an appreciation of their merits by the people.

The Day School, which will continue in operation until June next, has had a larger attendance than during any former year in its history.

The Night School, while falling off somewhat in attendance from the preceding year, has nevertheless been well patronized. The policy of the Institute has been to keep up the standard of excellence in its graduates by awarding diplomas only to those whose merit entitles them to their receipt. This policy has been a cause of the falling off in the number of pupils in the Night Schools, many young men, becoming discouraged by want of success in not being advanced to a higher class after a year's study, leave the school, rather than, by beginning over again, win their promotion by the excellence of their work, instead of by the number of months they were engaged in it. This policy of the Board will nevertheless be continued, as by no other course can the value of the diplomas and the high reputation of the School be maintained. That such a result follows is shown by a comparison of the examinations of the present with those of previous years, there being a gain in efficiency for the year 1884-85 over 1883-84 of 17 per cent. in the first-year classes, 17 per cent. in the second-year classes, and 9 per cent. in the third-year classes. It is hoped, and believed, that under the able management of Professor Fuchs even more gratifying results will be hereafter attained.

The number of graduates in the Night School for the present year will probably be twenty-two, each of whom will have deservedly earned the diploma to be awarded.

The Commercial School, which is self-supporting, held for six months. The Library was kept up in current periodicals and much used, but there were no important additions of books.

* * * * *

While the usual appropriations have been made by both city and state during the past year for the benefit of the Maryland Institute, its resources are still of a most limited character, and far out of proportion to its usefulness to the community.

The building, constructed in 1851, which was supposed by its early managers to be amply sufficient for the accommodation of all its schools, and, at the same time, to afford a large hall for exhibition purposes, it has been found necessary to devote entirely to the use of the Schools of Art and Design. The revenue, therefore, heretofore derived from the exhibitions, and from the rental of the hall, is no longer available.

The increased excellence of the instruction now given in the Schools of Art and Design has necessarily added materially to the cost of maintenance, and it is thus only with great effort and some faith in the liberality and encouragement of the citizens of Baltimore that the Board of Managers have maintained the Maryland Institute, earnestly believing that in so doing they are advancing the interests of a community which would not fail, if called upon, to sustain their efforts.

The Managers also indulge in the hope that Industrial Exhibitions will not be altogether abandoned in this city. The present and, most certainly, the future of Baltimore is too largely interested in manufactures to ignore the necessity of, from time to time, affording an opportunity to our skilled artisans of making a display of their wares. The success of former exhibitions of this character certainly indicates that one held now, when our manufacturing industry is so much larger than it was then, would not be a failure; and, while the Maryland Institute building is no longer available for this purpose, its present Managers are, it is to be hoped, as earnest and energetic, and would be as successful, as their predecessors, if a proper encouragement were given by the citizens in inaugurating and carrying out within the next one or two years an Industrial Exhibition which, while not a centennial or a world's fair, would yet be most beneficial and creditable to Baltimore.

The following statement gives a partial exhibit of the receipts and expenses of the fiscal year ending August 31, 1885:

Receipts from September 1, 1884, to March 31, 1885.....	\$12,223 28
Expenses	10,826 79
	<hr/>
Balance on hand April 1, 1885	\$1,396 49

Very respectfully,

FERDINAND C. LATROBE, *President.*

An elaborate prospectus* was issued showing the courses in detail of the schools for the season of 1885-86 and containing a list of the graduates of the schools from 1857 to 1885, inclusive, with a star attached to the names of those who received the Peabody prizes.

With the new departure in the courses of study and methods of instruction, begun when Mr. Hugh Newell was called to take charge of the schools, and still further developed when Professor Fuchs, then principal of the Massachusetts Normal Art School, was chosen to fill the vacancy left by the voluntary resignation of Mr. Hugh Newell, the schools rapidly increased in efficiency.

Under the direction of Professor Fuchs the courses in all the schools were still more thoroughly graded and systematized, and a course of study, progressing by regular gradation through three and four years, was arranged. A free "post graduate" course of a year, for the graduates of the evening school, was also established; and a principle of thoroughness and discipline formerly unknown to any similar drawing schools in the country, was inaugurated. While in the former Day classes of the Institute, the pay pupils had

* "Maryland Institute for the Promotion of the Mechanic Arts, Schools of Art, Design and Industrial Drawing, Bookkeeping and Writing. Library. 1885-86. Pp. 23."

gone at their own sweet will; now, a definite course of study was required for those wishing to graduate. Special classes were arranged for those wishing only a partial course or special instruction.

The change now begun was a radical one and while its first effects might very probably be seen in the decreasing number of pupils, there could be little doubt that its advantages would be seen in the increasing excellence of the graduates, when the first class had completed the three and four years courses.

The following statements by the managers of the Institute precede in the prospectus the detailed programmes of classes and studies

MARYLAND INSTITUTE SCHOOLS OF ART AND INDUSTRIAL DRAWING, 1885-86.

The Board of Managers of the Maryland Institute take pleasure in announcing the continued and growing success of its Schools of Art and Design, and in stating that they have, during the past two years undergone such improvements and received such extensive additions to their collection of casts, models and other art studies, that the facilities for teaching Drawing, Painting and Sculpture are now of a high order and fully maintain for the Schools the high rank they have always held among the Art Educational Institutions of the country. The attention of those desirous of studying Art is invited to these Schools, upon the guarantee that all instruction in the various departments is most thorough and systematic under the direction of Professor OTTO FUCHS, late Principal of the Massachusetts Normal Art School, aided by an efficient corps of assistants in both Day and Evening Classes and in consequence the Schools have gained a reputation for efficiency and thoroughness that has drawn many students from different parts of the Union to Baltimore for the purpose of studying Art and Industrial Drawing.

OBJECT OF THE SCHOOLS.

The object of these schools is to furnish the best and most thorough instruction in the various branches of Artistic and Industrial Drawing, Painting and Modeling in Clay, to all persons desiring to study Art with a view of following the same professionally, as teachers, designers, decorators, or skilled artisans generally; also to give a liberal art education to those who wish to study art as an accomplishment, and for the enjoyment of its refining and elevating influences.

There will be Day and Evening Classes open as follows, viz.: the Day Classes—Regular and Special—from October 1st, 1885, to May 29, 1886, in which all branches of Drawing, Painting, and Modeling are taught to students of both sexes. The Evening Classes are open to male students only, from October 12, 1885, to March 19, 1886, for the study of Free-hand, Mechanical and Architectural Drawing, the different branches being taught in separate classes by experienced teachers, engaged practically in the arts which they teach. Designing and Decorating in the flat and round is made an important feature in both day and evening classes.

From the Second Annual Report by Professor Fuchs, the principal of the schools, the following extracts relating to the general management are taken; such details as are essential will be given in the account of the schools which follows this general history of the Institute.

This report is of unusual value as it records the results of two years of the new experiment.

BALTIMORE, June 2nd, 1885.

To the Chairman and Committee on Schools of Art and Design of the Maryland Institute.

GENTLEMEN: In presenting to you my Second Annual report upon the work and progress of the Art Schools of the Institute during the term just closed, I have the honor to state: that the Day Schools were duly opened on the first of October with a good attendance in both regular and special classes; a large proportion of whom being former students returned to continue their studies. The zeal and interest with which all the regular as well as many special students entered upon and continued their work throughout the term has been most gratifying and it is evident that the advantages of the system introduced last year have been duly recognized and fully appreciated. During the summer vacation many important improvements were made in the arrangements of studies, lecture rooms, etc., which have added greatly to the comfort and convenience of all connected with the School. The modeling room was also fitted up and put in operation, so that now all departments embraced in the full course of Art studies, as indicated in the catalogue, are in good working order. Several needed additions have also been made to our collection of casts, models and other studies which have been of great service, and as it is our earnest desire to enhance the efficiency of this school from year to year it is necessary that its facilities for study should be increased, some things must be renewed from time to time, and as the spirit of progress moves the world to-day we are compelled to struggle forward. Every next year's work should, if possible, be better than the last, and I hope sincerely that public spirited friends of Art education who have the means may feel sufficient interest in the work the Institute is doing to aid us further in procuring good examples of art works; such as pictures and designs for decorations, books on painting, sculpture and industrial art, without which it is difficult to study or to teach.

The total number of pupils of the Day School is given as 267; of these 103 are in the Saturday classes; the normal class for teachers of the Public Schools, and the children's class, both of which were very successful in keeping the interest and developing the ability to draw.

His testimony as to the value of free-hand drawing in developing the taste and love of beauty of the child is worthy of note; of these classes he says:

The Saturday classes showed a large increase in attendance over last year; the whole number registered in that being 47, against 103, this year. A large proportion in this class are children of both sexes who attend school on other days of the week and the regularity with which these attend the drawing school on Saturday as well as the deep interest they take in their work, speaks plainer than words can express; that it is to them a real pleasure and the beneficial effect the practice of drawing from nature has upon the minds of children in developing their perceptive faculties cannot be overestimated, it not only teaches them to be close and accurate observers of what they see, but also cultivates their taste and appreciation of beauty, symmetry of form and order of arrangement, which if properly implanted in youth will grow later in life into that love and enjoyment of true art, which only those can estimate who have learned to feel its charms. Parents are cordially invited to visit the school at the Institute any Saturday between the hours of 10 and 2, while the school is in session.

A number of teachers in the public schools have also availed themselves of the opportunities to attend the Saturday classes for the purpose of qualifying themselves to teach their pupils more thoroughly and intelligently the art of drawing from

objects and I cannot urge too strongly upon teachers the great advantages in having acquired the facility of sketching objects, for oftentimes a graphic illustration, though simple but accurate, will serve to make clear to the minds of children things which could not be explained by the most exhaustive description in words; descriptions of things accompanied by sketches and diagrams are as much more interesting and instructive to children as are lectures and stereoscopic views and illustrations to adults.

Of the new study first introduced in these schools the past year, which was formerly thought only necessary for sculptors but is now considered as an essential factor in elementary art training, as well as a part of the equipment of the professional artist, he says:

Modeling in clay has been an exceedingly interesting study to all the advanced students as it is also the most important in its application to many of the industrial arts. In this department under the direction of Mr. S. H. Adams, the students have made excellent progress as can be seen by their works which are now on exhibition at the Institute. It gives me pleasure to state; that altogether the work of the students is in advance of last year and more may be accomplished if our resources and facilities could be extended so as to keep step with the requirements in the higher branches of art education and I trust that at no distant day the Board of Management may be enabled to enlarge the usefulness of the Institute by the establishment of a well appointed school of practical design.

He sees great improvement both in the Evening Mechanical drawing classes and in the artistic class which he ascribes to the better discipline and graded instruction. He says:

NIGHT SCHOOLS.

The night schools were opened on the evening of October 13th and continued until March 20th upon the same plan as last year and although the results last year were regarded as very satisfactory, I am happy to state; that those of this year are a long way ahead, every department has given a good account of itself both in the quality and amount of work done, a healthy rivalry has been kindled among the pupils to see who can do the best and greatest amount of work and the uniformity as well as excellence of the drawings made in all divisions speaks as well for the sound and thorough instruction as it does for the ambition, industry and skill of the pupils; indeed it would be difficult to find better executed drawings in many architectural or mechanical drafting rooms, than those made by some of our graduates this year, nor does their merit consist in execution alone, but also in the thorough practical understanding of the subjects and while the highest degree of technique and neatness is exacted in all the work, accuracy and completeness is held of the first importance.

The work in the artistic class is likewise greatly in advance of last year, the studies are in charcoal from still life groups, heads from the antique and portrait heads from life. The latter are not finished works of artists, but simply studies or sketches made in six and four hours; the object aimed at particularly in these studies being: to acquire a broad and free artistic treatment, dexterity in handling and in producing strong and vigorous effects, after this has been attained, the student can bestow as much time as he pleases to exercise his skill in technique and finish in whatever medium or style it suits his fancy best to work.

The drawing of machines from the actual model was described in his first report, the class of this year is reported as similarly successful.

He discusses the importance of similar models for the class in architectural drawing, and expresses gratitude to the Messrs. and Miss Garrett for their generous donation to be used in procuring such models for use the ensuing year.

He declares that in excellence and efficiency the night schools of the Institute are not surpassed elsewhere in the country and refers with pleasure to the public verdict passed upon the work of the Institute pupils as follows:

The exhibit which the schools of the Maryland Institute made at Madison, Wisconsin, last summer at the convention of the National Educational Association, was highly commended by the examining committee for its excellence and thoroughness. A complete exhibit of this year's work will also be sent to the same convention which meets in July at Saratoga.

He gives the attendance in the Night School as follows:

The attendance in the several divisions has been as follows, viz:

Free-hand	163
Mechanical	140
Architectural	86
	<hr/>
	389

In closing he urges the importance of having a public Art Gallery in Baltimore.

The commencement exercises were held June 2, 1885. As the addresses and the Report of the Principal of the Schools were not published by the Institute, only the Annual Report of the Managers being issued, I am indebted to the courtesy of Professor Fuchs for a manuscript copy of his report from which the quotations on the pages just preceding were taken, and to Mr. George L. McCahan, the efficient actuary of the Institute, for a copy of the Baltimore Sun of June 3, 1885, which contains a concise résumé of the addresses and proceedings on that occasion.

The annual report of the Principal of the Schools having been read by Professor Fuchs, the customary address was then delivered by the Hon. J. Morrison Harris. He said: "The Maryland Institute is an intellectual force." Combating the false ideas as to the unintellectual character of the work both of farmer and mechanic, "the sickly sentimentality about labor, the real dignity of which" the American youth commonly "misunderstands," despite the great democratic ideas on which his country is based, he declared that young men growing up with these ideas make serious mistakes. The farmer is not necessarily a dullard, nor can the mechanic succeed if he lacks trained brains; on the contrary, success in these days, in any industrial avocation above that of the lowest drudgery, is impossible without intelligent direction. Such schools as these of the Maryland Institute and the newly founded public City Manual Training School are doing a great and needed work. "All that such

schools need is to be understood and supported and they will do good work in building up the reputation and prosperity of the City."

Professor Newell, State Superintendent of Education and principal of the State Normal School, addressed the graduates of the commercial school.

He said: "Commercial virtues rank very high among the Christian graces. These are the virtues which the graduates of the Maryland Institute are expected to display. Truth, accuracy, order, and system should be their aim and object."

President Cushing distributed the premiums to the thirty-three graduates. He said "that the certificate of the Institute is honestly earned by hard work."

"Dr. N. H. Morison, provost of the Peabody Institute, distributed the Peabody prizes awarded to the graduates of the schools of Art and Design. There are \$500 distributed annually under the will of the late Mr. George Peabody, the proviso being that the amount in any case shall not exceed \$100, nor be less than \$50, to one individual. It had been customary to award \$100 and \$50 prizes, but so close was the competition this year that it was decided to give nine money prizes and to give certificates of honorable mention to six others, which certificates Mr. Cushing announced were an evidence that the recipients were equally worthy of the Peabody prizes with those who received them."

The Sun also publishes the names of all the graduates and of those receiving the prizes and "honorable mention." This, the leading daily papers of the city, especially the Baltimore Sun and the Baltimore American, always are careful to do; so that, to win one of the "Peabody prizes," or to receive an "honorable mention," is made doubly worth striving for by the pupils of the Institute schools. In this way the city journals co-operate most effectually with the managers of the Institute, freely aiding them in their good and gratuitous work.

Indeed, a history of this Institute would be wanting in a very essential feature if it should fail to record that the press of Baltimore have always manifested most commendable interest in the welfare of the Maryland Institute, not only by giving full reports of their public meetings and printing lists of the graduates and the names of the pupils who have won prizes, but also by frequent editorials urging the needs and commending the purposes of the Institute to the public. The proprietor of the Sun, Mr. A. S. Abell, has long been an active supporter, aiding liberally by contributions of money as well as by giving the powerful influence of his journal. The voluntary, gratuitous exertions of the Managers, who are for the most part leading business men, who give so freely of their time, thoughts, and means to this association, are efficiently supplemented

by this co-operation by the press; so that a striking example is furnished of what the voluntary combination of public spirited citizens, acting in a private capacity, can accomplish for the public interests.

It is by such "Object Lessons" that the mutual interdependence of all classes and conditions of men is made manifest. The rich give their wealth, not for their own selfish gratification, but for the use of others. The educators and scholars give their knowledge, the business men their time and experience, all contributing something of value in order to furnish opportunities not otherwise offered, for all,—poor and rich as it may chance,—to acquire such definite industrial knowledge as will practically serve them in the battle of life.

In 1886 the managers issued the various publications relating to the Institute in one large pamphlet,* with an engraved view of the building on the last page of the cover.

This was in striking contrast with the flyleaf of four pages which contained the Thirty-seventh Annual Report. The '86 pamphlet contained a full showing of the Institute, beginning with the charter and by-laws, followed by the Thirty-eighth Annual Report of the Managers, the Annual Report of the Schools by Professor Fuchs, the Commencement Addresses, and the prospectus and catalogue of the Schools. These reports and addresses are here freely quoted from, as follows:

THIRTY-EIGHTH ANNUAL REPORT.

BALTIMORE, April 21, 1886.

To the Members of the Maryland Institute:

The Managers of the Institute herewith submit their thirty-eighth annual report.

Since the last report the work of the Institute has been concentrated on the Night and Day Schools of Art and Design, on the Commercial School, on the Library and the care of the Hall. These have taxed our resources to the utmost, and have required more means than have so far been at our disposal. The other schools, lectures and exhibitions which were originally carried on by the Institute are now better managed by other agencies, and the board has wisely confined its action to those objects, in the conduct of which, the Institute can accomplish the best results and be of most benefit to our city, state and nation. The Night and Day Schools of Art and Design have well maintained their high reputation, and show in the work of their pupils average results not exceeded by any similar schools in the United States. The night school had this year 382 pupils, a slight increase on the number of last year, divided as follows:

Free Hand Division	150
Mechanical "	118
Architectural "	114

* Maryland Institute for the Promotion of the Mechanic Arts. 1886.

Charter and By-Laws.

Thirty-eighth Annual Report.

Report of the principal of the Schools of Art and Design.

Address: His Honor Mayor Hodges, at Commencement.

Address: Geo. R. Skillman, Esq., at Commencement.

Catalogue of Schools for 1886-87. *Reprinted by Microfilm*®

The Night School opened October 12th and closed March 19th, having been in session sixty-four nights. The attendance of the pupils throughout the session was very full and regular. Their behavior and interests in their work all that could be desired, and their drawings reflect credit on themselves and their instructors.

* * * * *

The Day School of Art and Design opened October 1, and will close May 29. It has had this year 244 pupils, a slight decrease from the number of last year, and divided as follows:

Regular Students	62
Special "	90
Saturday "	92

The pupils in the day school have attended with commendable regularity, and exhibit great earnestness in their work, which promises to show an advance on the very good work of last year.

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The Commercial School was opened by Mr. John Core, as Principal, on October 1, and was in session every Tuesday and Thursday evening for six months. Thirty-four students attended, being within one of the number of last year.

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The Library now contains 20,449 vols., of which 136 were added this year. The pupils of the schools and the members of the Institute frequented the Library and made good use of both books and periodicals; but it is a matter of regret that we cannot afford to spend a sufficient sum to procure some essential works of art and some of the more modern works in the various departments of science, industry and general literature.

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The board wishes to congratulate the members anew on the great improvement in the administration of the affairs of the Institute since the appointment of Mr. Geo. L. McCahan as Actuary.

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The receipts of the Institute did not pay its expenses last year by about \$4,000, and the deficiency this year will be about the same. The expenses cannot be reduced without very seriously, if not fatally, impairing the usefulness and excellence of the work of the schools. Last year we raised the amount needed by subscriptions from individuals, and we must again look to outside munificence to tide us over this year.

The state and city still continue their appropriations, and the Messrs. and Miss Garrett kindly gave us \$500 00 for the purchase of much needed studies and models for the Schools of Art and Design.

The total receipts of the Institute from September 1, 1885, to August 31, 1886, \$12,125.13.

Total expenditures from September 1, 1885, to August 31, 1886, \$16,474.13.

The board is happy to report that it has, in all probability, secured the services of Prof. Otto Fuchs, Mr. Wm. S. Robinson and Miss A. C. Palmer, for the coming year.

Respectfully submitted,

JOS M. CUSHING, *President.*

Professor Fuchs having now been in charge of the schools long enough to see his first class of graduates, says:

BALTIMORE, June 1st, 1886.

To the Chairman and Committee on Schools of Art and Design of the Maryland Institute.

GENTLEMEN: I have the honor of presenting to you this evening my third annual report upon the condition of the Maryland Institute Schools of Art and Design; and,

as this marks the conclusion of my term of engagement, I feel not unlike the master of a ship upon his return to the home port after a long cruise, when the condition of his craft shall receive a searching examination, his accounts adjusted and balance drawn, to show whether he has made a gain or loss for those who entrusted their property to his care. You have, therefore, to pass judgment upon the condition of the schools to-day, and decide whether the character of the work of students in the different departments of both Day and Evening classes, which is spread for your inspection upon the screens in the Exhibition Hall at the Institute, meets your approval, and whether the progress made by our pupils in the Art classes during the three years passed has satisfied your expectations; also whether the training given to those in the various branches of the Evening Industrial Drawing Schools is suited to the needs and requirements in its practical adaptation to the industries of this community.

THE EFFICIENCY OF THE SCHOOLS A PRIME OBJECT.

In planning the courses of instruction for the several branches, I have endeavored to make most of the means and facilities which were placed at my command, holding steadily to the one purpose, that is to enhance the efficiency of the school by making the courses of study thorough from the beginning, and succeed by gradual stages to the highest point of proficiency. It gives me great pleasure to state that the interest with which the students in all the classes pursue their studies is steadily increasing, many remaining daily long after school hours to practice, and in addition, supplement their school studies by working industriously at home. It is most gratifying to notice that the craving once so prevalent to plunge right into painting without any preparation, and the premature ambition to decorate, with the help of the teacher, some little fancy article for amusement or pastime, has almost entirely disappeared and given place to legitimate study and a willingness to submit to the necessary training by which the eye is taught to see, the mind to conceive, and, by patient practice, the hand enabled to execute intelligently original work with nature's objects for a model.

THE ADVANTAGE OF A GRADED CLASS SYSTEM SHOWN BY RESULTS.

The regular graded class system which was introduced into the Institute Schools three years ago has had a fair trial, is now in a proper state of development, and the results submitted to you and the people of Baltimore who are interested in art education to decide whether it has or not proven a success.

In order to make this system complete and effective it was necessary to require proper discipline in the school, regularity and promptness in attendance, and the requisite qualification for promotion from one grade to another. At first there appeared to be some objection to these regulations, especially that of completing the work belonging to one class and passing examinations before advancing to the next, and a certain number who were thus deficient failed to return; the loss thereby occasioned to the Institute, however, is but a slight pecuniary one, and should not be regretted on account of the great gain which has resulted in the more thorough organization of the schools and the increased benefits to those who come there for the purpose of study and improvement.

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He points with justifiable pride to the work of his pupils in painting then on exhibition, as justifying his plan of demanding thorough work in drawing before painting is begun. He records a total of 244 pupils of the Day School, 62 of whom are in the regular classes of the course.

From his report on the Night Schools the following extracts are taken:

NIGHT SCHOOLS.

The Evening Drawing Classes are now in such a condition that I can say, with confidence, there are none better organized and equipped or more efficient in this country; the work and instruction in all three divisions is brought down to a thorough practical basis, the interest of the pupils increasing as they progress in their work and begin to realize the great value the studies which they pursue are to them in their various occupations.

It was very gratifying to hear the favorable comments made by the professional gentlemen who were invited to examine and judge the work of the graduates, both as to the quality and amount executed in the short time the schools were in session.

He invites attention to public exhibition of pupils' work to be opened the three last days of the present week and then announces an innovation in the Night Classes.

THE NIGHT CLASSES NOW FIRST ATTENDED BY WOMEN PUPILS.

Among the students who attended the Free Hand Division this term were several ladies, some of whom are teachers in the public schools. This is a new departure in the evening classes, and I trust we may have the pleasure of welcoming many more the coming season. I can give those who desire to attend the positive assurance that they need not have the slightest apprehension of meeting anything objectionable in or about the Institute; though we had some four hundred students last year, not one single case of breach of order or decorum was reported.

The course of instruction in the Free Hand and Mechanical Divisions is substantially the same as it was last year—the system of drawing all things from objects is strictly adhered to.

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The attendance in the several divisions of the Night Schools was as follows, viz :

	No. of Pupils.	No. of Teachers.	No. of Graduates.
Free Hand.....	150	4	4
Mechanical.....	118	3	10
Architectural.....	114	2	5
Total.....	382	9	19

WHAT THE PRESENT DIPLOMAS TESTIFY.

In conclusion I wish to say a word to the graduates. The diplomas which will be handed you this evening are not complimentary testimonials given you for having attended the Schools of Art and Design, but a certificate of qualification and proficiency, which you have rightfully earned through close and zealous attention to your studies; but to those who wish to devote themselves to the profession of artists or draftsmen, I must say further, that what you have accomplished so far is but students' work, executed under the guidance of your instructors. Experience will teach you, as it has many others in all professions, that there is no royal road to success or distinction. You have been sufficiently initiated into the mysteries of art to know that you have yet much to learn, and you must forge your way with sincere devotion and enthusiasm and never-ending zeal if you wish to attain ultimately to that degree of proficiency which is necessary to entitle you to the noble rank of true artists and accomplished draftsmen.

With sincere thanks to the gentlemen of the Committee on Schools of Art and Design and the Board of Managers for their cordial and generous support, and great sacrifice of valuable time in the interest of the Maryland Institute, by and through which alone it was possible to accomplish what has been done,

I am, with great respect, faithfully,

OTTO FUCHS, *Principal*.

The Commencement address delivered by Mayor Hodges, fills eleven pages. From this very interesting paper the following suggestive paragraphs, relating to the development of art in this country and especially of Industrial Art, are taken:

THE USES OF IDEAL ART HITHERTO IGNORED IN AMERICA.

Explain it how we may, or excuse it how we may, the fact remains that down to recent times, art and its relations to life have not been understood in America. Of course there have been, even from colonial times, those who endeavor by practice or by precept to enlighten the public in this respect; but there were voices in the wilderness, unheard or unregarded. All arts, crafts and callings that pertained to the body, to feeding, clothing and housing it, these and their dependent vocations were deemed "practical," and hence held in high honor, and were carried to great and manifold perfection.

* * * * *

That the painting of a landscape, the modeling of a vase, or the designing of an ornament could be the serious business of an earnest man, was what few could be brought to comprehend.

For to comprehend it demands a fundamental change in the conception of life and its duties. It requires that we shall rise above the mere barbarian plane and gain a new horizon. If the Creator has made the world fair for us, and has given us the faculty of receiving high pleasure from lovely color and noble form, assuredly it was not with the intention that we should despise His gifts, and reject them as not worth our having. It was meant that we should accept these gifts with delight; that the enjoyment of them should form a new and wonderful education for us; and that the loving imitation of them might become a high moral training. For to man alone, so far as we know, has been given the power of enjoying things that in no way minister to the physical life. For aught that we can see, human life might be as long and healthful if the sun rose and set in a shroud of monotonous gray, and the same might be true if there were no distinction in hue between the rose and soil from which it springs. They were made lovely, not for our use, but for our delight, that by that delight we might be lifted to a higher plane of spiritual being. Ruskin has said, "So far from art being immoral, little except art is moral, life without industry is guilt, and industry without art is brutality."

AMERICAN ART AND LITERATURE CONTRASTED.

And even now there is no general recognition of art by the American people, no effort to place us, in this respect, on a level with other nations of the world. At the Paris Exhibition of 1878, which I attended as a commissioner by appointment of the President, we exhibited no sculpture, and the exhibit of painting was so meagre in quantity that it would have been less humiliating to our pride had there been none at all. We hold out no public honors, nor distinctions, to artists. Until very lately our art students had to go to Paris, or Rome, or Munich to study, and bring back a French, or an Italian, or a German style.

Our literature has already passed through a similar experience. It has had its time of neglect, then its time of imitation, and, at last, it has emerged to honor, and to nationality.

American literature has a recognized position in the world, while American art, as national and characteristic, can hardly be said to exist. It is not that we lack the men; what we want are good schools and public appreciation and support. It is not enough that a good picture, or etching, or design should be sure of finding a purchaser—though even that would be much—but the artist should know that his fellow citizens could value his work, and were proud of it.

One hears it said now and then that there is not, and can not be, an original American school of art—at least until our young civilization has become mature.

* * * * *

THE WORLD OF NATURE AND OF HUMANITY OPEN TO THE OBSERVATION OF THE ARTIST
IN AMERICA AS TRULY AS ELSEWHERE.

But a consolation is left us. At least we can become faithful copyists of nature. We have eyes that can be trained to see, and hands that can be taught to guide the brush or graver, or mould the plastic clay. The whole domain of landscape is ours—from the granite coasts of Maine to the tangled hammocks of Florida—and we have scenery that would have taxed even the magic pencil of Turner, when at the height of his Royal Academician honors, in the kaleidoscopic wonders of the Yosemite Valley, the Yellowstone, or the sculptured terraces of the Colorado.

We can draw the human form and face. It is not for me to assign to portraiture its proper place in the hierarchy of art, but Mr. Ruskin has said with emphasis that "Art has never done more than this—to give the likeness of a noble human being." And he continues: "Not only so, but it very seldom does so much as this; and the best pictures that exist of the great schools are all portraits, or groups of portraits, often of very simple and nowise noble persons. It is well known that many of the famous Madonnas and children by the old masters, to be seen in the picture galleries of Europe, representing the Virgin Mary, the Infant Jesus, and St. John, are the portraits, in many cases, of very plain people.

We have the native, organic life around us—the birds and plants and flowers of our woods and fields. Whether we can do more than faithfully to copy them will depend upon ourselves. The Greeks developed an order of architecture from a common weed—the acanthus, and the Egyptians a national school of art from the reeds and lilies of the Nile.

It may be that even faithful study and loving imitation of the beauty and grace around us will not suffice to develop an American school of art; but one thing is certain, that we shall never have one without it, and the course of training which is pursued in this and similar schools—training the eye to see and the hand to execute, awakening the faculties to perceive grace, and beauty of form and color—is the training which leads to it.

SKILL OF AMERICAN WOOD ENGRAVERS.

I leave it to those who can speak with authority on such matters, to say how far we have already progressed in this direction. In one branch, certainly, a distinctively American school has arisen, and that is in the art of wood-engraving. Not only in delicacy and finish, but in what I may call imaginative effect, American wood-engraving leads the world. The best work of the English, French, or Germans (so far as I have had opportunities of comparison) is coarse and weak compared to ours. It has developed itself within a generation, rapidly but naturally, as the bud opens into the flower.

And about this art of wood-engraving, there are two things worth noticing; First, that it is eminently suited (at least so it seems to me) to be practiced by women. It is free from the drawbacks and inconveniences of other branches; there is no cumbersome apparatus, no deleterious acids, no risks that the most careful work shall be

ruined in the firing. It can be exercised in the pure air of the country as well as in town; and requiring fineness and delicacy of touch with little muscular exertion, it is peculiarly suited to the female eye and hand.

THE DEVELOPMENT OF ART LEADS TO A DEMAND FOR ART WORKS.

And, secondly, nothing better exemplifies the fact that with the development of an art arises simultaneously a demand for its products. In no country is there such a profusion of wood engraving as with us. Everything is illustrated, from the child's primer to the pretentious history, from the slight caricature in the afternoon paper to such finished works of art as those which adorn the pages of the *Century*.

And this leads me to speak to a point which all will admit to be practical, and that is the commercial value of art. What we expend yearly on imported art-products is something prodigious.

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I know perfectly well that money's worth is just as valuable as money; and though we pay heavy sums yearly for imported goods we are none the poorer, provided we need the goods, can afford to gratify our taste, and they are worth what we pay for them. But the point is this: if we encourage American designs, we shall produce American designers. By this we shall add, by so much, to the productive powers of our country, and so much to its potential wealth.

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The designer of patterns for wall papers, carpets, or furniture, is a producer in the strictest sense of the word. And if it would be bad economy for us to weave no cloth because we can get it from Europe, so it is bad economy to go abroad for designs which we could produce at home.

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NATIVE ART DESIGNERS NOW NEEDED IN MANY INDUSTRIES.

So long as we were content to remain a people of farmers, and so long as the ocean was only traversed by sails, this matter was of less consequence to us; but now, with our rapidly increasing population, with the phenomenal growth of our large cities, our manufactures are rising into ever-increasing importance, and with steam transit all the great markets of the world are brought to our door. It is not by trying to shut out the manufactures of other nations that we shall remedy our defects, but by improving our own.

Let me cite here a few words from the report of Commissioner Howard on the Paris Exposition of 1878:

"The most formidable danger which now threatens us from abroad is the great and commendable energy with which our rivals are urging and extending their system of special education." And, after specifying a number of instances, he continues:

TECHNICAL TRADE AND ART SCHOOLS NOW NEEDED.

"I desire to place upon record my unhesitating conviction that special trade and art schools have become one of the paramount necessities in nations whose prosperity is largely dependent upon handicraft. It has been said that the Yankee character is so apt, acute and inventive, that the adjuncts, drill and training, which are requisite in some of the Old World communities, are not needed here. To adopt this view as a rule of action would be a sad mistake. The American may not need the incentive of school discipline, but he does require, and the near future will demonstrate that he must have, the thorough knowledge and methods of systematic training. Even now our textile industries are suffering by means of our lack in

this respect. In mechanical expedients to cheapen production no nation is so fertile as ours, but in the higher and more intellectual elements we are sadly wanting. In the invention of contrivances of a merely mechanical character we distance the world, both in quantity and quality, but when it comes to æsthetic designs, where beauty and gracefulness unite in the formation of attractive wares, it is our highest ambition to *steal*. An intelligent French manufacturer remarked to me (I am still quoting Mr. Howard), 'We furnish the brains for the world in the matter of manufacturing. We mean to lead in the invention and composition of designs and styles. We expect you Americans to use them after we have thrown them aside. You are welcome to them then, as we shall have made our profit out of them before you can introduce them.'

And the Commissioner goes on to show that other European nations, by their schools of art and design, are preparing to contest the supremacy of France in this respect. America alone lags behind. You may ask me how is this state of things to be mended? Well a full answer to that question could only be given after ripe reflection, and by one having authority to speak on the subject; certainly not by the present speaker. But I will tell you how it is not to be done. It is not to be done by sitting still and saying, "the government ought to do something." It is not to be done by saying somebody ought to do something. It is not to be done by saying—as some degenerate Baltimoreans are not ashamed to say—"Oh, Baltimore is a little one-horse place; we must look to New York or to Boston." "Your lot is cast in Sparta; adorn *that*."

Something will be done if our wealthy citizens, following the generous examples already set them, will form collections of painting, sculpture, engravings, and other works of art, to which the public can have access; and if they will be (as some have been) the generous patrons and fosterers of native talent and genius, whenever discovered; and if they will encourage and support such earnest, faithful endeavors as that of this excellent school, and the worthy institution of which it is a part. Yes, then something may be done.

* * * * *

Some of our worthy fellow-citizens have expressed doubts whether our present system of public school education was in all respects the best adapted to the needs of our youth. On this important question it is not my present business to express any opinion, as to where and how improvements could be introduced, even if they should be needed; but, with respect to the institution in whose behalf I am now speaking, there is no room for apprehension or doubt. In whatever aspect we consider it, and whether we look at the immediate services it is rendering, or the far wider and more important services that it might render, if its abilities and scope were enlarged, it appears to me that nothing can come from it but good—good to those who attend its classes and avail themselves of its advantages, and good to the whole community in the influences that radiate from it.

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I now take leave of the subject for the present, with the expression of my admiration of the work which has been performed by this clever graduating class of the Schools of Art and Design of the Maryland Institute which I had the pleasure of examining three weeks ago. To this commendation I will add the confession of my faith in the competency of its teachers, and in the efficiency of its officers, adding thereto my best wishes for its continuing and increasing success.

The address to the graduates of the Commercial School was delivered by George R. Skillman, Esq. In addition to his claim for the artistic interests of the study, his clear showing of the value of thoroughness of study, of integrity of character, and of the conviction that the world we live in is a world of ordered law, render his

words worthy the consideration of all thoughtful persons and are equally applicable to the entire province ruled over by the educator. He says :

* * * * *

To my mind (and I think the business men generally will agree with me) the subject of book-keeping, commercial calculations and business training, is not only not a dull, dry subject to talk about, but an exceedingly lively, interesting, and sometimes really exciting one. I am not quite sure that the Commercial Class of the Maryland Institute is not as much of an art school as the department in which is taught the making of beautiful pictures and designs in mechanical and architectural drawing.

I do not know of a more interesting picture than a balance-sheet, drawn by a competent book-keeper, from a merchant's ledger, when the balance is on the right side. It is true the balance is sometimes on the other side, but then we would not consider the picture as interesting, and probably would not care to put it on public exhibition. I look upon the science of book-keeping as upon a compass to a ship. A ship may be perfect in every detail, with masts, spars, rigging, sails or steam, and be freighted with a valuable cargo of merchandise—or perhaps souls—and, without a compass, she would in all human probability sooner or later be dashed to pieces upon the rocks.

So with a business man. He may have his fine warehouses or factory, have a large stock of goods, thoroughly equipped for business, send out his salesmen to all parts of the country, and yet not have a correct system of keeping his books and accounts, and sooner or later, in ninety-nine times out of one hundred, he will be destroyed as a business man.

To you, young gentlemen of the graduating class of the Commercial department, I want to remind you that you have only learned the theory of the science of accounts. You are now to put this theory into practice.

Although the business of keeping books is extremely easy, yet the adaptation of the principle of double entry, to extensive and complicated transactions, so as to receive the full benefit of the system, is a process which requires the most complete knowledge, not only of the theoretical and practical, but of the *science* of book-keeping. Book-keeping, like all other arts, can only be mastered by industry, perseverance and attention. The young man who wants to be perfect in the art, and excel, must think for himself, and endeavor to understand the *why* and *wherefore* of all that he does, instead of resting satisfied with what he may have been taught at school. You have been taught certain rules in relation to the system of accounts. If you have been attentive to the instructions you have received and will call into exercise your reasoning powers and memory, and are the masters and not the slaves of the rules taught you, you will experience no difficulty in unraveling or adjusting any set of accounts however complicated or diversified.

If on the other hand you have merely committed the rules to memory, without knowing the *why* and *wherefore*, or have attended to your studies in a perfunctory manner, and do not now put your whole heart in the work, let me assure you, you will never occupy a position at the top of the ladder as an accountant.

* * * * *

To receive a diploma from the Maryland Institute in any of its departments mean close application—honest, hard work, and a thoroughness in the branches learned. I think the small number of graduates, considering the large number of pupils, conclusive proof of this statement.

* * * * *

I know it is natural that you should feel elated at the successful termination of your studies; and justly so. ~~But I want to say to you~~—if you would be successful in the pursuit of your choice, whatever it may be, you must be energetic—

earnest—prompt—and if you would have a clear conscience (and I hold no man can be truly successful who has not) you must be temperate, virtuous and just. Remember that “Character is better than gold.” It gives the poor man credit, position, the esteem of employers, and is often the foundation of great fortune.

Be true men, and if you do not succeed in gaining worldly riches, you will at least be God's noblemen.

VALUE OF A KNOWLEDGE OF BOOK-KEEPING.

A word, Mr. President, to our friends in the audience. Did it ever occur to you that many of the failures in business, and the want of success on the part of many of our young men—and women too—was owing to the fact that they were entirely ignorant of the science of book-keeping and the system of accounts? Yet such is the fact. Many of the business failures of our country, and not a few in our own city, can be traced to the fact that the principals did not understand the science of book-keeping any more than an infant understands the science of astronomy. I would advise every parent who contemplates putting his son into any kind of business, whether it be mechanical, manufacturing, merchandising, or even artistical, to first educate him in the science of accounts. No man should engage in any kind of business who does not thoroughly understand the keeping of his own books. If he does, enter into business thus unprepared, he is at the mercy of others who may or may not be competent and reliable.

DISCIPLINARY VALUE OF KEEPING ACCOUNT OF PERSONAL OUTLAYS.

The keeping of accounts is a wonderful discipline. It teaches carefulness, systematic economy, truthfulness. Show me a young man who keeps a regular account of all his personal expenses, and I will show you a young man who is not extravagant—one who is sure to live within his income, and will not spend his money or his time in riotous living. You will find him, as a rule, accurate in all things. Take this young man into your employ, and you will find him to be truthful, and if you give him your cash account to keep, you may rely upon his keeping it correct to the cent.

I know some business men do not attach the same importance to having a thoroughly competent and reliable man to keep their accounts as I do, and for the very reason that they do not themselves understand the system. It is enough for them that they buy goods at a price and sell them at a profit; it does not occur to them that frequently the profits are more than swept away by expenses and bad debts, until it is too late and the sheriff steps in and takes what is left. The most profitable employee (in my opinion) a business man can have is a reliable and competent book-keeper.

* * * * *

I know of no position in life where this science may not be of value, and, if I had the power, I would make this branch of science as thoroughly taught in our schools as are grammar and arithmetic.

We are living in a fast and wonderful age. Business is not now transacted as it was in the days of our fathers. We are not content to go along in the slow old foggy way of our ancestors, but must stretch out our arms to the remotest parts of the country, and even of the world. Instead of being content with small shops and with a half dozen employees, we must have monster establishments with all the modern appliances of steam and electricity, and employees by the hundred and thousands.

* * * * *

ALL ACTIVITIES MUST BE SUBORDINATE TO ORDERED LAW.

Truly we are living in a wonderful age. God is moulding this earth to suit his divine will and plan. He is shaping everything for the benefit of his children, and gives us just what we need at the right time, and as we have the intelligence and capacity to receive it; but he does everything in order. Order is Heaven's first law,

and if we would enjoy what he gives us, and profit by it, we must obey this law, and remember that all we do, or undertake to do, must be done in accordance with this law.

No matter what our position in life, or what be the nature of an undertaking, whether it be obedience to our duties in the ranks or commanding an army; a sailor before the mast or the captain in command; an artisan performing his daily task or a manufacturer employing hundreds or thousands of workmen; the pupil in the school or the teacher who instructs, we must obey this law of order, and this means, that we must have something to act as a brake, a guide, a regulator, a recording index, to show us just where we are and keep us from error and danger, otherwise our steam boilers would blow up, our cars would come into collision on the track, our steamers and ships would run upon the rocks or be lost at sea. In other words, all would be chaos. How could it be possible for the world to move with the rapidity with which it does, and man bringing to his aid and making obedient to his will the pent up forces from beneath the earth, the explosive power of steam and chemicals of modern science, and even the electric powers from the clouds above, without entire demoralization and destruction, were it not for this law of order? Now, what we understand by this is the keeping of a record, accurate calculations, a history of what we do, a charging of what goes out and a crediting of what comes in, the science of keeping books and accounts.

Now, in conclusion, let me repeat—there is no circumstance in life in which this science may not be of value to you, and that the Commercial School of the Maryland Institute offers to you every opportunity to qualify yourself in this branch of science.

A CHARACTERISTIC EVENT EMPHASIZING THE NEW ERA OF THE INSTITUTE.

An interesting event in the history of the Maryland Institute was the complimentary dinner given to the President, Joseph M. Cushing, Esq., on Monday, March 14th, 1887, by his associates of the Board of Managers, in recognition of his devotion to the interests of the Institute, and to the success of his indefatigable exertions in its behalf.

A permanent record of the occasion exists in a pamphlet* issued shortly afterwards, illustrated by a portrait of the president, and containing an account of the occasion, with the speeches and remarks delivered; from which the following extracts are quoted.

As most of the addresses related directly to the past and present conditions of the Institute, they were of lasting value. The distinctively historical address, delivered by Ex-Mayor Latrobe, the son of the distinguished founder of the Institute, will be found in the preceding pages, wherein the history of the early years of this already venerable institution is given at length.

The following invitation was sent by the Board of Managers whose names are attached.

BALTIMORE, *February 28th*, 1887.

JOSEPH M. CUSHING, Esq.,

DEAR SIR:—The undersigned, members of the Board of Managers of the Maryland Institute, request the honor of your company at dinner on a day to be named by yourself.

*Maryland Institute. Complimentary Dinner to Joseph M. Cushing, Esq., President, by the Board of Managers, Monday, March 14th, 1887, Baltimore. J. D. Ehlers & Co., Printers and Engravers, Hoen Building, Baltimore, Md. Pp. 50.

Your acceptance will be a mutual recognition of personal friendship and of official duties faithfully discharged; and will serve to continue and strengthen the *entente cordiale* which has so notably distinguished the history of the Board, and which must be perpetuated if our objects are to be attained.

Yours faithfully,

GEO. R. SKILLMAN,
GEO. H. PAGELS,
E. W. ROBINSON,
D. L. BARTLETT,
JAS. PENTLAND,
M. A. NEWELL,
ALEX. L. SPEAR,
T. P. PERINE,
JAMES H. BOND,
W. H. PERKINS,
SAMUEL W. REGENER,
ERNEST HOEN,

ROBERT K. MARTIN,
JOSHUA LYNCH,
JOHN M. CARTER,
G. HARLAN WILLIAMS,
JOHN L. LAWTON,
S. ECCLES, Jr.
JAMES YOUNG,
SAMUEL R. WAITE,
WM. H. SHRYOCK,
FERDINAND C. LATROBE,
CHARLES W. WASHBURN.

To this Mr. Cushing replied, naming March 14th as the day for the dinner.

A RECORD OF THE OCCASION.

The Company assembled at Barnum's Hotel, on Monday, March 14th, at 7 o'clock P. M. All the members of the Board of Managers were present except Mr. David L. Bartlett, who was detained at home by indisposition, and Mr. Harry Walters, who was absent from the city.

His Honor, Mayor Hodges, and Messrs. John A. Robb and James R. Horner, City Register and Comptroller, were unavoidably absent, as also Hon. Carroll Spence, for many years Chairman of the Committee on Schools of Art and Design.

The following invited guests were present: Col. I. Edwards Clarke, Bureau of Education, Washington, D. C., Mr. George L. McCahan, Actuary of the Institute, Professor Otto Fuchs, Principal of the Schools of Art and Design, and Mr. J. Sewell Thomas, Deputy City Register.

Mr. George R. Skillman, Vice-President of the Institute, presided, with Mr. Cushing, the guest of the occasion, upon his right.

The dinner was given at Barnum's Hotel and was worthy the ancient repute of that famous hostelry. The menu card was a very artistic announcement of a well chosen dinner. The following is the list of the topics and speakers after dinner:

POSTPRANDIAL.

Opening address	Geo. R. Skillman, Esq.
Our Guest, the President of the Institute.....	Joseph M. Cushing, Esq.
Vocal selection	Samuel Eccles, Jr., Esq.
The City of Baltimore: Her growing manufactures dependent on her growing art	His honor, Mayor Hodges.
The Maryland Institute, its past, present, and future	Hon. F. C. Latrobe.
Art in everyday life	Col. I. Edwards Clarke.
Vocal selection	Samuel Eccles, Jr., Esq.
Art in the public schools	Prof. M. A. Newell.
The Schools of Art and Design	Prof. Otto Fuchs.
The Founders of the Institute	John M. Carter, Esq.

Home, Sweet Home.

When the fitting time arrived the presiding officer rose and spoke as follows:

OPENING ADDRESS.

By GEO. R. SKILLMAN, Esq.

GENTLEMEN: Until a few years ago, it was the custom of the Board of Managers of the Maryland Institute, at the close of the fiscal year, to meet around the festive board, and while enjoying the good things that refresh the inner man, discuss matters relating to the welfare of the Institute. On these occasions matters were sometimes brought forward for discussion that afterwards developed into great importance, and were of much benefit to the Institute, and had much to do with shaping its affairs. * * *

The work of the Maryland Institute from its very inception up to the present time has been a peculiar one; peculiar in the sense that it has in all the past, and is now, performing a work that never has, and is not now, being done by any other organization, and I think I may hazard the assertion that it probably will never be so well done by any other.

The speaker briefly recited the various activities of the Institute in the past, the need for the continuance of which had been superseded by the several public institutions since founded by the late Johns Hopkins and George Peabody, and recently by the free public libraries founded by Enoch Pratt.

He then spoke with pride of the development of the schools of art and design. He set forth very plainly, however, the embarrassments and hindrances experienced by the managers owing to the lack of adequate funds, since the work that seemed imperatively demanded of them compelled the annual expenditure of a sum largely in excess of their income. The deficit thus increased the past year had recently been made up by the generous aid of public spirited friends, whose names he regretted that he was not at liberty to mention. Then turning to the guest of the evening, he said:

Mr. Cushing, it is now nearly two years since you assumed the duties of the position of President of the Institute. At the time you were installed into the office, the Institute was having some of its dark days. I confess, as one of the members of the board, I did not see just how we were going to keep afloat, and at the same time keep our Schools of Art and Design up to the then high standard; but, sir, you have solved the problem for the time being. You, sir, put your shoulder to the wheel, and, with indomitable energy and perseverance and well-directed effort you kept the machinery in motion. You not only enabled us to hold all our departments up to the then high standard, but if anything, sir, you elevated them still higher, and to-day we all feel proud of the Maryland Institute Schools.

We feel this is no ordinary occasion. We are gathered around this festive board to do honor to our President, who has so nobly served us, not only by his kindly advice, his untiring zeal, indomitable energy and perseverance, but by substantial aid as well.

The Vice-President appropriately ended his graceful opening speech by a hearty expression of the feeling entertained by the members of the Board for their fellow manager, the honored guest of the evening, and announced the first toast, "Our Guest, the President of the Institute."

Mr. Cushing, on rising to respond, said:

Mr. Chairman and Managers of the Maryland Institute and Invited Guests:

That man is more or less than human to whom praise from friends does not give great pleasure; when the praise is only proportioned to desert, it is grateful as a recognition of the service rendered, and is desired as the only reward possible for unpaid services. But when the praise is full and free, confined by no trammels of justice, but expressing the fullness of loving kindness without regard to desert, then no man can help a thrill of joy; the more undeserved the praise the more pleasant when tendered by those he loves. In this latter case I am to-night, and from my heart I thank you for this proof of the mutual affection that grows up from our official relations. And I assure you it is a most royal payment for the moderate service I have been able to render the Maryland Institute during my tenure of the office of President.

I wish that eloquence were mine to express in more fitting terms what I so deeply feel.

No president can do much in any association without aid and inspiration from those associated with him, and it is to-night my most pleasant duty to bear witness to the zeal, integrity and intelligence of all members officially connected with the management of the affairs of this Institute. With an eye single to its best interest, without any personal ends to serve, you have enabled our beloved Institute, year by year, to enter upon fuller development and increase its usefulness in this community.

Then, after a concise statement of the most notable eras in the life of the Institute, and reciting the names of its leading benefactors he spoke of the schools and of the results of the educational efforts of the Institute to practically serve the community.

The Schools of Art and Design of the Institute, early took high rank, but in after years owing to the too widely extended work of the Institute and its too slender resources, it lost its comparative position and was surpassed by schools more generously endowed. In 1879, however, we secured the services of Professor Hugh Newell, as Principal of the Schools of Art and Design, and as if touched by a new life, the schools began to make a reputation second to but few. In 1883, Professor Newell resigned to take a position in the Johns Hopkins University, and at this time, by a most happy combination of circumstances, we secured our present Principal, Professor Otto Fuchs, and we can confidently say to-night that within its range our school is equal to the best in the United States.

It is not self-sustaining, and the annual deficiency ranges from \$3,000 to \$4,000. Last year Mr. A. S. Abell most generously gave us \$4,000, to clear us of debt, and we hope some public spirited citizen will this year also come to our aid. If we increased our prices for tuition, we would drive away those we most wish to help, and would thus fail in the noblest part of our work, the helping all artisans and artists to a means of bettering their condition and teaching them to add the grace and beauty of sound art to all the industrial occupations.

We have opened new avenues of labor to both women and men, enabling the women to forget the mournful "Song of the Shirt," and enable many workmen to start their occupations far ahead, both as to pay and reputation, of what would have been possible without our schools. We have also sent forth some whom the world will not let die, like Rinehart; and Bolton Jones lives still to show the good results of our training. We have instructed from time to time 16,142 pupils, and have sent them forth to add a charm to leisure, method to genius, beauty to handicraft, and to feel themselves endowed with a new means of support.

But, gentlemen, this school can continue to exist and improve and add to its good work only if the Board can find the means to pay the best instructors, and to pro-

vide the best models. Our plant could not be replaced with an expenditure of less than \$150,000, and it would be a wasteful loss to let our School fail for the want of a few thousand dollars annually. We hope that, as George Peabody has given Baltimore an Institute of Letters, Music and Art; as Enoch Pratt has given us a Free Library; as Johns Hopkins has provided a University and Hospital; as Thomas Wilson has endowed a Sanitarium; and Samuel Ready a Free Orphan Asylum; as McDonogh and Barnum have helped free education by establishing a great school for the training both of mind and hand; so we hope that at some time some of our wealthy citizens will endow a School of Art and Design. May we live to see that day.

Mayor Hodges who was to respond to the next sentiment, being detained by sickness, sent a written response which was admirably read by John M. Carter, Esq.

The topic assigned to the Mayor was "The City of Baltimore—Her Growing Manufactures Dependent on Her Growing Art." He wrote :

* * * Recognizing the worthiness of Mr. Cushing to be the recipient of the high honor which the managers intend to confer on him, by reason of his untiring zeal in the cause of art education, it would be especially pleasing to me if I could be allowed to indicate by my presence at the table this evening my sympathy with the act, but a temporary disability, I regret to say, prevents my attendance. I find in the sentiment of the toast a mine of thoughts and facts touching an important national interest, too vast to be satisfactorily treated within the limits of a brief and hastily improvised letter. I allude to the influence of art on manufactures, and particularly to its beautifying effect on their multiform productions.

He then refers to the First World's Fair held in Hyde Park, London, in 1851, and to the impression made on the people of Great Britain by the revelations then made of the evident superiority of the artistic manufactures of the other European nations, when thus directly contrasted with those of England. This led to the founding of many schools of design. After reciting a number of the leading places where such schools were established, he thus comments on the wonderful development of artistic beauty which has since characterized many English manufactures; rightly attributing this change to the direct influence of technical artistic training.

Art and design, under the influence of a rapidly refining taste throughout the civilized world, having become an indispensable element of the higher varieties of manufactures, the pupils graduated by these schools are in demand for the chief seats of British manufacturing art. The artistic improvement in British manufactures consequent upon this sagacious action, was almost immediate, as shown in their exhibits at the Paris Exposition, held at the Palais de l'Industrie, of 1855; and again made more distinctly observable at the celebrated Exposition of the Industry of all Nations, held in the same city in 1867; and, still progressing in artistic skill, the improvement in British exhibits was still more pronounced at Vienna in 1873, the final culmination being something absolutely grand and luminous at the Paris Exposition of 1878, as witnessed by the writer with emotions of delight and admiration. I need not refer to similar schools in various parts of France and Germany, for these have been in operation for many years, and I presume that no one will question the claim that the beauty and grace of many of their commercial articles, which find ready sale by reason of that, are attributable to the skill of the designers, who are educated at those schools.

Indeed, it may be said that in textile fabrics and in articles of ornamentation, the present age has outstripped all former periods of the world's history, and it may justly claim for itself the merit of artistic appreciation. The manufacturer who can produce the most graceful designs in his tissues or wares, other things being equal, commands the market. Awkward designs will go to the backwoods, and the untutored designer to bankruptcy. This improvement in taste has been effected primarily through the instrumentality of schools of art and design. They have not only revolutionized the outward forms of manufactures, by the application of grace and beauty, but their good work has entered the dwelling places of the people of various degrees of industrial and opulent life. * * *

After giving several illustrative instances of the growing love for artistic surroundings now apparent in their community and claiming that this fact made the toast to which he had been assigned to respond peculiarly appropriate, his letter closed as follows:

It was Goethe, I believe, who said: "Take care of the beautiful, the useful will take care of itself;" but in this case some one must take care of the useful for the sake of the beautiful, and as the managers of the Maryland Institute for the Promotion of the Mechanic Arts have undertaken this laudable work, they are entitled to sympathy and substantial assistance in its prosecution.

I am, respectfully,

JAMES HODGES.

After the reading of this letter, the Chairman announced the following toast, calling on Ex-Mayor Latrobe to respond: "The Maryland Institute—its past, present, and future."

Mr. Latrobe then read the very interesting historical address already referred to as quoted in the earlier pages of this history.* His paper was warmly appreciated, and he had no sooner concluded than Mr. Samuel Eccles, Jr., rose and in a few fit words proposed the health of the elder Mr. Latrobe, to whose reminiscences so much of the interest of the paper just read was due. Hon. John H. B. Latrobe, the father of the Ex-Mayor, and the only surviving founder of the Maryland Institute. This was received with enthusiasm, and two manuscript addresses which had been delivered by him before the Institute in 1829 and 1830 were then passed around the table for inspection and regarded with great interest.

The next topic was then announced: "Art in everyday life." Responded to as follows by Col. I. Edwards Clarke, of the Bureau of Education, Washington, D. C.:

Mr. President and Gentlemen of the Maryland Institute:

I wish it was in my power to fully express my appreciation of your courtesy in extending to me an invitation to join with you to-night in paying honor to your president, with whom I am happy to claim, both a personal and hereditary friendship.

I have been deeply interested while listening to the history of your noble Institute as just now recited by Mr. Latrobe,—peculiarly interested perhaps, for one not a resident of your city; because, now for some years, my studies have made me somewhat familiar with the history of the Art Institutions of our country. As one

* See *ante*, page 136.

of the results of these researches, the names of Robert Carey Long and of Mr. Latrobe, who were among the most zealous founders and supporters of your Institute have grown "as familiar as household words."

Gentlemen, it is only when the relations that exist between a local institution and the community of which it is a part, and those more remote, which, in the ever widening circles of its influence, it comes to bear to other communities, are traced, that the full significance of such an undertaking as the one which the founders of your Institute initiated is realized, and the usefulness and importance of such apparently local enterprises begin to be known.

It was a distinct step forward in the march of civilization, that was taken in Philadelphia and in Baltimore, when, almost simultaneously, the Franklin Institute and the Maryland Institute were begun.

After paying a merited tribute to the elder Latrobe the speaker recalled the fact of the early introduction of the railroad in Baltimore and then said :

Nor again, can I forget the thrill of wonder and surprise that ran through the land, when some few years later, the first telegraphic message in the world trembled over the wires from Washington to Baltimore, announcing the momentous event, in fit words by the ever-to-be-remembered question, "What hath God wrought?"

By these wonderful inventions, which seem almost infinite in the potency of their far-reaching results, and by the thousand modern appliances of Art in every-day life,—the latter, comparatively a new feature in our American life—the whole people have been lifted up to higher and ever higher levels of comfort and happiness.

I use, advisedly, the all-embracing expression, "the whole people," in strictest literalness. Fortunately, in this presence, this statement will not be questioned; because, to your efforts and to those of your predecessors in the directory of the Institute, this movement has been largely due,—due in a more direct sense, and with fuller significance, than, doubtless, they or you could realize!

Unfortunately, Baltimore did not always keep in the van of the onward march of artistic industries, where your founders had chosen her position. To your credit, however, it must not be forgotten that Minifie, absurdly dropped from the city public schools, just as he was guiding them on the artistic lines since followed by the most advanced nations of Europe, was for a time—too brief a time it is true—given charge of your Institute Schools.

In view of the present situation owing to the reported transfer to other interests of the great railroad so long and so intimately associated with the city, a definite increase of the art classes of the Institute was suggested as an educational policy on the part of the city; so that, taught by Professor Fuchs how to wed art to industry;

The art workers of Baltimore shall create such objects of beauty to gladden and decorate the life of every day, that all the world must needs throng her studios and ateliers to secure them!

Nor is this picture of a possible future for the workers of your city by any means mere idle talk. How many an else-forgotten old world town and city, whose names to-day fall trippingly from the tongues of men, owe their rescue from oblivion, solely, to the work of artist and artisan! Not to mention those olden people of the far distant past, known only by recovered fragments of the long buried works of their humble potters, it will suffice to name, of modern towns, Limoges and Sevres, with their still prosperous industries; and to recall how the brilliant hues and graceful conceits of the glass of Salviati, kindle, for us to-day, memories of the olden romance of Venice while the vanished glories of the storied kingdom

of Bohemia, live again in the lustrous splendor of the incandescent creations of her glass-blowers and potters!

Sir: I yesterday received a telegram in these words, "Your toast will be Art in Every Day Life." Ah! thought I, my Maryland friends are true to their traditional hospitality, since, for an after-dinner talk, they thus freely give a subject to which only volumes could do justice! So, gentlemen, I have attempted no formal address, nor is there need; subject matter enough adorns the table before us.

After reciting various proofs that love of beauty and art producing capacity, were inherent in Americans, however little they had been developed in the past, the speaker said:

It is just this general recognition and love of the beautiful which characterizes our people, that justifies a belief in their art possibilities. But, Sir, the lateness of the hour forbids my enlarging upon this attractive theme. It needs but brief reflection to realize, in how many subtle, as well as more obvious ways, Art, in its myriad forms, enters into our every-day life. To attempt to portray this, to point out its countless influences as one walks the city streets, to consider how architectural appeals, how the artistically arrayed treasures in the shop windows attract; to note the charm of artistic raiment, the rapidly shifting effects of the ever-moving throngs, with their accidental combinations of color and form; then to go from the streets to the homes of the people, and mark there, the all-pervading influence of Art;—modifying, harmonizing, beautifying, civilizing; this domestic Art,—not the mighty Goddess of the Temple, but the charming, humanizing deity of the home, of the hearth! To adequately enlarge upon any one of these phases of my subject, were, as already suggested, to utter volumes. I shall not attempt this impossible task, but content myself with simply asking you, since you seek for the uses of Art in every-day life, to consider for a moment, the table before us!

Then, after referring to various objects before them as charming illustrations of the topics assigned him, the speaker closed his impromptu remarks,—having been unaware till his arrival, of the formal nature of the occasion,—with the following reference to the beautiful center piece, which was the crowning ornament of the tastefully adorned table, the significance and purpose of which was as yet wholly unsuspected by the chief guest of the evening.

But for a yet more charming illustration of the higher utilities of this every-day art, let your admiring eyes rest on that resplendent trophy of ceramic art, which so glorifies the center of your table, where the blushing masses of the heaped roses, testify to the warmth of the appreciation felt for your honored president, by the grateful and generous pupils of your Art Schools. What a beautiful and fitting tribute, redolent of emotions more precious than the attar of the rose,—the spontaneous expression of grateful hearts, charmingly, exquisitely embodied.

Look, too, at the magnificent mammoth vase in which the flowers are piled, and you behold another striking example of Art; that Art which, more and more, is to be a familiar feature of our every-day life. Far away, over sea, among the forests of Bohemia, or Hungary, the artist sought to make some fitting memento of a festal hour like this; by day he thought, by night he dreamed, till, at last, he could find for his purpose, in Nature, or in Art, nothing finer than the rare beauty and lavish splendor with which Nature has dowered the plumes of her most royal bird; and so, as you see, he has but set in fadeless and enduring enamel, those unrivalled, iridescent hues, and now, in this far-off land, the beautiful girls, for whose delight, unconsciously, he was embodying his dreams of beauty,—have heaped the vase with roses and offer it, as their tribute, to our bashful, bachelor guest to-night!

Now, well may this fortunate mortal realize, at this happy moment, the joyful amazement of Endymion, as,

from his hands full fain
Juno's proud birds are pecking pearly grain.

Who of us would not welcome an incident like this, which has happened to your worthy President, in his encounter, to-night, with Art in Every-Day Life?

The succeeding sentiment was responded to by the able State Superintendent of Education. His too brief words are given in full because weighty with authority.

ART IN THE PUBLIC SCHOOLS.

(Responded to by Professor M. A. Newell.)

MR. CHAIRMAN: During the Centennial Exposition I had the pleasure of hearing the Austrian Minister, the Baron von Schwarz-Senborn, make an address before a distinguished assembly at Washington, among whom were veteran educators from all parts of the United States. He complimented his hearers upon their magnificent and beautiful country, on its commerce, its manufactures, its railroads, its mines, its schools; but "Gentlemen," said he, "if you will allow me to be frank with you, your Art is horrid." If we have made any progress in Art since then, and I think we have made a great deal, it is because we have been guided to some extent by the famous maxim of Bismarck: "Whatever you would find in the life of a nation you must first put in its schools." And, if we have not made as much progress as could be wished, it is because we have not been able to apply the maxim as widely as is desirable.

A KNOWLEDGE OF DRAWING THE FIRST STEP IN ART.

The foundation of all Art, industrial or other, is drawing. The painter, the sculptor, the carver, the silversmith, the architect, the ship-builder, the machinist, nay, even the carpenter, the blacksmith and the tailor are more or less dependent, for the successful prosecution of their respective trades, on a knowledge of drawing. This study is not now regarded as an accomplishment, a luxury to be enjoyed only by those who have time and money at their disposal, but as a necessity of the same rank, of as much importance, and as universal utility, as reading and writing. That this truth has not been carried into practical effect more generally, is owing to the fact that teachers of drawing are not as easily to be had as teachers of the three R's. It is in this regard that the Maryland Institute presents strong claims to the favorable consideration of the people of Maryland, and especially of the city of Baltimore. Indeed the School of Design is the Normal Art School of the State, and, if it were as liberally supported as the Normal Art School of Massachusetts, is capable of rendering as efficient service.

Here may be found, year after year among the graduates, teachers who will go out and "teach the young idea" not "how to shoot," but how to draw. Here, every Saturday of the year, may be found teachers of the Public Schools busily engaged in preparing themselves to teach this branch, neglected hitherto, but which will, in a short time, be required from all elementary teachers as positively as a knowledge of reading and writing.

It has been said that all cannot be taught to draw. In a sense this is true, but as commonly understood, it is emphatically untrue. Not all children can be made great elocutionists; but all can be taught to read; not all children can be taught to write a beautiful hand, but every child can be taught to write; so, not every child can be made a great artist. *Digitized by Google* Not absolutely an idiot, can be

taught to express his ideas by drawing. I said "not absolutely an idiot." I withhold the exception. At a school for the feeble-minded in England, a boy was once admitted who did not know the head of a horse from his tail; but, after some years of training, he had acquired such proficiency in drawing that Prince Albert, making a visit to the Institution, was so much struck by a spirited drawing of a horse that had been done by this idiotic boy, that he asked permission to carry it home with him. Let us, then, recognizing and realizing the usefulness of drawing, continue our support and fostering care of the Maryland Institute, whose Schools of Art and Design may justly be termed the Normal Art School of Maryland.

In response to the next toast "The School of Art and Design," the Principal of these Institute Schools gave his testimony as to their good work in the past and present.

THE SCHOOLS OF ART AND DESIGN.

(Responded to by Prof. Otto Fuchs.)

Mr. Chairman and Gentlemen :

The Maryland Institute Schools of Art and Design, as the natural descendant from the original "Maryland Institute for the Promotion of the Mechanic Arts," may well look back through its ancestral record with pride and satisfaction. What this Institute has done in years past for the development of manufactures in this community, through its industrial exhibitions, lectures and schools of instruction in technical, scientific and literary branches of learning, you know better than I can tell you. Indeed, all I know about that is, that I frequently meet men, who are prominent as builders, proprietors of manufactories or otherwise holding important positions in the technical departments of the same, who tell me that they were at one time members or students of this time-honored institution, and seem invariably to take pride in mentioning this fact. The character and aim of the Institute, like many other things in this progressive age, have undergone such changes as the exigencies of the times demand. The magnitude of modern industrial exhibitions is such, that these require facilities and accommodations which are far beyond our present possibilities. The scientific and literary branches formerly included in the course of studies are now vested with the Johns Hopkins University, Peabody Institute and Pratt Library, and being relieved of these, we are enabled to direct our entire attention to technical, industrial and fine art education. The organization of the classes, systematic and progressive arrangement of studies in industrial drawing in the evening school, and Free-hand drawing, Painting and Modeling in the day school, has shown most satisfactory results. At our exhibition held last June, the universal verdict rendered by Artists, Architects, Engineers and professional Draftsmen, who were invited to examine the work and give their opinion, was, that it could not be better; the mechanical and architectural drawings showed intelligence and thoroughness as well as a high degree of skill in draftsmanship. The same encomiums were passed upon the work in the artistic classes of the day as well as evening school. I ought to mention here also, that several of our most proficient students were selected for positions as draftsmen and designers by leading manufacturers who attend the exhibition and were impressed with the excellence of the work.

There is no doubt that the Maryland Institute Schools of Art and Design, for thoroughness in training and bringing out skill and proficiency where the requisite talent exists, are equal to the best in the country, and therefore ought to have the confidence and material support of those at least whose interests require that they should keep abreast of the times, with their competitors in other cities. To what

extent similar institutions are valued in other cities, I have but to cite a few instances to satisfy those who may be doubtful as to the practical utility of industrial Art Schools. * * *

After reciting briefly what has been done in like directions, in New York, Philadelphia, Massachusetts, St. Louis, Chicago, Milwaukee, Minneapolis, Buffalo and Detroit, in each of which places he declared that small beginnings in Art Education have resulted in great Institutions and Enterprises, he concluded.

It gives me pleasure, Mr. Chairman, to acknowledge here on behalf of the Schools of Art and Design, the hearty support and co-operation we have enjoyed since I have been connected with the Maryland Institute, from the Board of Managers, and more particularly from our honored guest, the President, through whose untiring efforts, wise counsel and devotion to the cause of industrial art education, a vast number of young men and women have been benefitted by being directed into useful and honorable occupations.

At the close of these remarks Professor Fuchs, acting for the teachers and pupils of the art schools, presented to President Cushing, who was completely surprised, the handsome vase filled with flowers already referred to. This was the most pleasing incident of this very charming occasion.

The response to the final formal sentiment so fitly reviews and sums up the history and influence of the Institute that it is here given in full.

THE FOUNDERS OF THE INSTITUTE.

(Responded to by John M. Carter, Esq.)

That our fathers fully comprehended the scope of their undertaking in founding the Maryland Institute for the Promotion of the Mechanic Arts is evidenced by the results of the labors performed by them before most of those at this festive board were born.

More than a quarter of a century before the World's Fair in the Crystal Palace in London, the Maryland Institute, following the example of the Franklin Institute in Philadelphia of the previous year, held an exhibition of articles of American manufacture in November, 1825, in the old Concert Hall on South Charles street. True, it was for articles of home production only, and it remained for a later day and generation to appreciate the advantages of foreign competition in the exhibits, to develop more liberally the ambitious efforts of our American manufacturers and to stimulate them to renewed exertion. But the beginning was made, and that, too, in a direction which has yielded wonderful returns in the advances accomplished in almost every branch of mechanical industry by our friends and neighbors.

Had it not been for the success of that exhibition and the training afforded by the succeeding courses of lectures conducted by the old Maryland Institute, the present organization would never have risen, Phoenix-like, from the ashes of its predecessor.

Again, in 1848, rehabilitated and re-inforced by youthful recruits to the cause, but numbering in its membership the names of Latrobe, Stapleton, Lucas, Hunt, Childs, King, Barling, Rogers and many others who had stood sponsors at the baptism of its parent, the present Institute inaugurated a system of annual exhibitions and for more than twenty years maintained them successfully. At the time the World's Fair in London was being held, in 1851, our Institute was house warm-

ing with an exhibition in its new hall, then, and for years after, the most spacious in the United States.

But the founders of the present Institute did not limit their effort to the exhibitions and lectures. With the acquisition of their new hall the Night School of Design was established, and 800 pupils during the first winter of its operation attested their appreciation of its great advantages. Mr. William Minifie, an instructor of national reputation, was secured for principal, and under his guidance the success of the school was at once assured. An author as well as teacher, his "system of drawing" to this day constitutes an approved method of instruction in the best schools of the country and even in England.

A library was also established and a school in chemistry, and later on the book-keeping and music schools. All these departments were conducted with great success. Public officials and private citizens vied with each other in liberal contributions of books to the library. Hon. Thomas Swann liberally aided the chemistry school, and later on Mr. Johns Hopkins left a handsome bequest to the school of design. The time came when other agencies arose in our midst for instruction in chemistry and music, but the impetus originated from the Institute's early efforts.

We have discontinued the annual exhibitions, but only in deference to the lessons learned from the great Centennial at Philadelphia, that to profit properly by such agencies we should have the world for our competitors. We have surrendered to the Peabody and Johns Hopkins our annual courses of lectures, but only that we might employ our audience hall to the best advantage in providing the largest accommodations for our growing schools.

A SCHOOL OF INDUSTRIAL ART.

And here we have concentrated all the energies of the Institute. No longer an elementary school of drawing, we have provided a full course of instruction, reaching out and comprehending a thorough training and finished education in industrial and artistic culture. Nay, more, we have established a normal art school for the preparation of teachers, and to-day the Institute's diploma of graduation in the regular course means that the holder is well equipped and thoroughly trained for the profession of giving instruction in all the branches taught in our own schools.

We have educated the community to the needs of training children from youth up in a knowledge of drawing and designing—the only universal language understood by man—and yet hitherto an almost unknown quantity in the curriculum of common school education.

Struggling through poverty we have sought in vain during years gone by to attract attention to the excellence of the work in which we were engaged. Except from the limited few whose manufacturing or mechanical pursuits enabled them to appreciate our labors we received no commendation; but the time has at last arrived when public-spirited citizens and legislators have learned to realize the importance and value of our undertakings, and their influence for good upon the community at large.

State and City have come to our aid with appropriations, not large, it is true, but immensely helpful to us in our straitened circumstances; and to-night from one of our guests, we learn the good news that our city fathers have kindly doubled both in annual stipend and term of years, the amount contracted for the education of pupils appointed by themselves.

Mr. Chairman, the outlook for the Institute is most promising; we have great cause for congratulation, but while we felicitate ourselves upon the present and indulge in more ambitious hopes for the future, let us not forget to do full justice to the memory of those who founded the Institute; they laid its foundations broad and deep and strong, and commenced the erection of an enterprise of which we have just cause to be proud. "*They* builded better than they knew."

On the conclusion of Mr. Carter's address, Colonel Bond, ex-president of the Institute, requested the chairman to call upon the guest from Washington to read some "After-Dinner Lines." These lines, which are included in the pamphlet account of the dinner, were most kindly and enthusiastically received by the courteous company, much to the relief of the embarrassed author; who had written them only, as he had supposed, for the amusement of a small dinner company. Several short, sparkling, impromptu speeches followed, enlivened, as the formal proceedings had been, by the admirable singing of Mr. Samuel Eccles, jr., who was occasionally supported by the whole company in chorus.

As a part of the history of this Institute, the proceedings of this very pleasant occasion have an incontestible claim for record here; but they have a far stronger claim than this merely local one, since the topics discussed by the distinguished speakers, although possessing such local interest, have far broader relations, and are linked to all the subjects to which this volume of the Report is allotted; since they treat, not only of the corporate efforts of an individual association, but include the whole question of Industrial Art drawing in the public schools, as well as of Technical Industrial Training in these schools and in special technical schools. It is seen, that, in the judgment of these speakers at least, all these various means coöperate to one common end.

The very valuable historical statements concerning the origin and development of the Institute which characterized the several responses give permanent interest to the record of this very delightful episode in the life of the Maryland Institute, while this evidence of the hearty good fellowship and appreciation of services rendered, which exists among the members of the Board, goes far towards accounting for the continuous success which has crowned their praiseworthy efforts. During the course of the evening the cheering announcement was made and received with enthusiastic applause, that the city authorities had just passed the resolution to double the annual appropriation to the Institute, making it \$6,000 in place of \$3,000, so that the members of the Board of Managers were furnished with very substantial reasons for considering the 14th of March, 1887, a memorable and auspicious date in the history of the Maryland Institute.

The Thirty-ninth Annual Report of the Board of Managers was issued in a pamphlet,* similar to that of the previous year, except the omission of a copy of the Charter and By-Laws. Now that the

* Maryland Institute for the Promotion of the Mechanic Arts. 1887.—Thirty-ninth Annual Report Board of Managers. Opening Address at Commencement, by Mr. Jos. M. Cushing, President. Report of Principal of the Schools of Art and Design. Address, Hon. Ferdinand C. Latrobe. Catalogue of Schools for 1887-88, [Printed by James Young, 14 South Street, Baltimore. Pp. 56.]

Schools of the Institute have been so thoroughly reorganized and so well equipped and manned, and that interest and effort is mostly centred on them, there is, as the managers remark, little variety to be looked for in the annual reports. The report says, under date of April 20, 1887:

The scope and character of the work of the Institute have not materially varied from the general tenor of its operations for the year 1886. Such slight variations as have occurred, all tend to convince the Managers of the wisdom of confining the field of their labors to few departments, and of endeavoring to bring them up to the highest point of efficiency.

The night and day schools of Art and Design continue to grow in reputation both at home and abroad, and the pupils in both schools display an earnest, conscientious devotion to their work that is most gratifying to their teachers and the friends of the school.

The summary of attendance in the schools is given as follows:

The pupils in Night Schools numbered 403, being 21 in excess of 1886. They were divided in classes as follows:

Free-hand Division	159
Mechanical	132
Architectural	112

The Night Schools opened October 11, 1886, and closed on March 18, 1887, having been in session 65 nights.

The attendance, industry, and behavior of the pupils were most satisfactory, and their teachers report the results of the session's labor as excellent.

The Day School of Art and Design opened October 4th, 1886, and will close May 28th, 1887. The number of pupils now in attendance is 227—18 less than in the previous year. They are divided as follows:

Regular students	48
Special students	87
Saturday students	86
Post graduates	6
Total	227

The pupils in the Day Schools have a most regular attendance, great earnestness in their work, and have devoted a great deal of extra time beyond the school hours to perfect themselves; but the number of graduates will be less this year than the last, and the quality of the work exhibited be of lower value than last year, because the course of instruction has been made four years instead of three years, as it was last year, and the only graduates we will have this year are those that failed to graduate last year. The previous year was an exceptional year, and we were able to show work rarely equaled in any Art School working within our limits. The present year will not show as good work as last year, and we will have to wait for next year to show how well the new departure of increase of the term of study will show to advantage.

The following suggestion that the City make use of the Institute as a normal art school to fit the public-school teachers for giving instruction in drawing is sound and practical.

It is proper just here to say, that as the City pays a considerable sum towards the support of the Institute, that it would be well if the proper Committee on Drawing

of the School Board of the City should require of all future applicants for positions as teachers of drawing, in the Public Schools of Baltimore, that all applicants for such positions should be required to present a diploma from the Schools of Art and Design of the Maryland Institute, or some other Art School of equal rank and that the applicants (if more than one), should be required to compete in an examination on questions to be furnished by an expert. By this competitive examination the City Schools would get the best teachers, and our pupils would have a further incentive to spend the needful four years in acquiring the knowledge requisite to enable them to be Instructors of Drawing in our Primary, Grammar and High Schools. Sometimes pupils who have taken only a small portion of our course represent themselves as graduates of our School of Art and Design, and this representation is unfair to those who hold our diplomas, which represent three or four years of hard work and the results of an examination by outside artists, engineers and masters of drawing, and also represent honest, intelligent and artistic work, for which the diploma is awarded without fear, favor or affection.

The account of the increased appropriation by the City, the passage of which was announced during the complimentary dinner to the President in March, as just recorded, follows:

The Board is happy to report that the Committee of Ways and Means of both branches of the City Council, fully persuaded of the good educational work done by the Maryland Institute, and feeling assured that the City Schools could find among the graduates of the Institute all needed instructors in drawing for the City Primary, Grammar and High Schools, reported unanimously in favor of paying to the Institute \$6,000 per year for six years, for the instruction of 30 pupils annually, to be appointed by the members of the Council and each appointee to hold for three years. The Board was also gratified by the recognition of its good work by the two branches of the City Council, which, on the next meeting after the report of the Committee on Ways and Means, passed the ordinance through both branches on the same night.

Thanks are also due to his Honor, the Mayor of Baltimore, James Hodges, who has always shown a lively interest in the Maryland Institute, and who signed the bill with an expression of the pleasure it gave him to aid so worthy an Institution.

The Board wishes to congratulate the members of the Institute on the apparent approach of an era of prosperity and increased usefulness, if only we can be put out of debt for the deficiency of this year. In view of the good work done by the Institute, this ought not to be difficult of accomplishment, but the members of the Institute ought to take it in hand and conclude it.

The Committee on the Hall has kept our property in good order, and have been able through the kindness of Mr. Oster, Inspector of Buildings, to have the outside of our building thoroughly and tastefully painted, and also to have the wood-work of the clock tower repaired.

Again, as ever since he has held the position, we must congratulate the members on the good service rendered by Mr. George L. McCahan, our Actuary. Industrious, intelligent, economical and honest. We think him a model officer.

The Board again presents to you its summary of receipts and expenditures of the fiscal year up to August 31st, 1887, instead of to April 1st, as was customary previous to last year.

RECEIPTS.

From September 1, 1886, to March 31, 1887.	\$9,368 51
Add State appropriation	3,000 00
From other sources	100 00

EXPENSES.

From September 1, 1886, to March 31, 1887.....	\$9,170 66
Add estimated expenses from April 1, 1887, to August 31, 1887..	4,940 00
Unpaid bills.....	200 00
Appropriation to Library	200 00
E. W. Robinson, loan.....	500 00
Garrett Fund, balance.....	243 32
	<hr/>
	\$15,253 98
Estimated expenses over receipts.....	2,785 47
Add sundries.....	500 00
	<hr/>
	\$3,285 47

The receipts for this year will not meet the expenditures by about \$3,200. Last year the deficiency was \$4,000, and Mr. A. S. Abell most generously sent his check for that amount. We must again this year appeal for private aid, but up to this date we have not received the amount needed to free us from debt. We hope the exertions of the members present at this meeting will accomplish the desired result.

The State of Maryland gave us, at its last session, the usual \$3,000 per year, but we hope that the friends of the Institution will urge upon that body, at its next session, to increase the appropriation to \$6,000 per year, for which we will offer to the persons designated in each county, by the General Assembly of Maryland, the appointment of 3 persons from each county annually, to our Schools of Art and Design, free of all tuition fees; each pupil to hold his or her appointment for three years, if the Legislature will make a contract with us for three or six years.

The Commercial School was opened by Mr. T. M. Jamison, on October 5th, 1886, and was in session every Tuesday and Thursday evenings for six months.

* * * * *

The Library now contains 20,578 volumes, and especially the periodicals and the Scientific and Art periodical issues are used very largely, but owing to want of means, the calls for new miscellaneous books could not be supplied. The usefulness of our library, as a merely circulating library, for new publications, has been supplied in a great measure by the Pratt Library, but it would be a great aid to our Art Schools if the departments of Drawing, Architecture and Art could be kept up. Unfortunately for this purpose we have at present no means. Owing to the kindness of Mr. Carpenter, editor of the *Sun*, and some other gentlemen, we have been able to subscribe to the set of 100 photographs of animals, birds and men in motion, which will be of great aid to our students.

If we could get an endowment that would give our Library Committee about \$1,000 per year, it would greatly aid our Art work.

It will soon be a question for the Board to consider whether, under the present tendency to have special instruction given under the best conditions of the specialty, our Institute had not better drop its Commercial Department and confine itself to the development of its Schools of Art and Design.

The Board has also the pleasure of reporting to the members and to the community, that on account of the increased appropriation from the city, and the hoped for increased appropriation from the State, that at its last meeting it adopted a resolution of even more careful economy than has hitherto characterized its usual economical method, and every committee will have to discuss before the Board any proposed expenditure in excess of the regular provisions of salaries and already authorized current expenditures.

The Committee on Lectures, the Committee on Exhibitions and other committees, all report in favor of the continuance of our present concentration of our energies and means on the Schools of Art and Design, Library and care of building.

All reports of the various committees are herewith transmitted to your body.

JOSEPH M. CUSHING, President.

It will be seen that the schools and the library, with direct reference to the use of the latter in promoting the interests of the art students, are destined more and more to absorb the resources and activities of the Institute.

The Commencement Addresses delivered June 7th, 1887, follow the Report. The brief address of the President is here given in full.

ADDRESS BY MR. JOSEPH M. CUSHING.

LADIES AND GENTLEMEN: The Board of Managers of the Maryland Institute, welcomes you to this the 39th Commencement of the Schools of Art and Design.

It is eminently fitting that the Commencement Exercises of an Institution that aims to add grace and beauty to the useful in Art, should be honored by the presence of Fair Women and intelligent men. Your attendance in such numbers to-night proves that you appreciate and encourage the good work which our schools are accomplishing.

This year will be memorable in the annals of the school as marking the time, when first, our City Government has aided our schools in some proportion comparable to the aid extended to similar Institutions in other American cities by their municipal authorities. For this wise and generous legislation, thanks are due to our Mayor and City Council, from all who favor encouragement to the Art Education that will enable Baltimore Artisans and Artists to compete on equal terms with their competitors in other cities. We hope that in the future the teachers of drawing in our Public Schools will avail themselves more fully of the advantages offered by our Saturday classes, and that hereafter vacancies in the positions of teachers of drawing will be filled by a competitive examination from among those candidates who hold a diploma, either from the Maryland Institute Art Schools, or from some other Art School of equal reputation. We would not desire that any faithful teacher now in the Public Schools should be either displaced or required to enter into a competition demanding a degree of excellence not contemplated at the time of appointment. Any of those now in the schools whose attainments fall short of the more advanced methods can easily supplement their present knowledge by taking a course of instruction in our schools.

It may be well to say just here, that graduates from any of our Public Schools, who wish to enter our Art Schools, are advanced exactly as far as any accurate training they may have, fits them for. Our schools do not wish to do any unnecessary work, but no true advancement in Art is possible unless the elementary training is accurate and scientific.

In Art, as in other branches of learning, there is no royal road, and unless the foundations are true and strong, the superstructure will be destitute of symmetry and strength.

Our class A, which is known as the elementary class of our schools, is much more advanced than any instruction that can possibly be given at present in our Public High Schools, and includes drawing in charcoal and sepia. Those graduates of our Public High Schools, who have taken the full course in our class A, or elementary class, have advanced rapidly, and those of them who attended this year stood at the head of the class.

Much might be accomplished for the good of Art, if our City School Board could persuade the members of the City Council to give the preference to the graduates of the Public Schools in their appointments of students to the Maryland Institute.

A new impetus will be given to Art development whenever our State Legislature will appropriate to the Maryland Institute an annual sum equal to that given by the City of Baltimore, and arrange for the appointment to its Art Schools of three

pupils, free of tuition, from each county of the State. We hope this may be done by our next legislature.

The work of the pupils of the Day and Night Schools of Art, will be on exhibition in the main hall of the Maryland Institute during the day and evening of June 8th, 9th and 10th, and you are all most cordially invited to inspect it. It happens, contrary to reasonable expectation, that the general average of the Art work this year will equal or surpass that of last year for we are just now in the period of transition from a three year to a four year course, which temporarily weakens the graduating class of the Day School. We think you will be pleased, and find much to admire. You will see none but honest work, all done by the pupils themselves and fully up to the average of any similar school in the country. You will bear with me a moment longer, while I explain how our prizes in the Night Schools are awarded. Artists, Draughtsmen, Engineers and Architects, the most prominent in their respective departments, that our City can furnish, examine the work of every graduate student, without any knowledge of the name of the students, and the prizes are awarded by their verdict. This secures absolute fairness.

In conclusion, the Board of Managers, wishes publicly to express its thanks to our zealous, faithful and efficient corps of instructors; they are the life of our Institute, and ought to be proud of their work.

The paragraphs in Professor Fuchs' report, which are of great interest, follow. The detailed statements found in his annual report will be given in the separate account of the schools. The influence of the example of the regular students upon the amateur pupils to which he alludes, is noteworthy. If the latter get nothing other from their attendance on the day classes than an insight into the thorough preliminary training which is essential to any excellence of attainment in art work, and if, further, they are brought by this contrast between real work and their own triflingness, to an appreciation of the essential worthlessness and tawdriness of that class of paltry and pretentious dabbling with paints with which, latterly, idle women have deceived themselves and their friends into the belief that they were doing something of artistic value, a most desirable result will have been attained.

No time is usually so hopelessly wasted as that which is given by ordinary amateurs to the learning of so-called "accomplishments."

Mediocrity in any of the fine arts is intolerable. "Better" is the enemy of "Good," says the French proverb, and with the increasing opportunities for hearing good music and for seeing good painting comes increasing knowledge on the part of the public of the comparative worthlessness of much that has before passed as "good."

On the other hand, with this increasing intelligence in regard to the relative value of acquisitions, there has also come a far more general knowledge of the value of thorough training in whatever department of learning or of activity is undertaken. After having gained as a foundation a good general education, it is beginning to be recognized that to know any one thing well, whether it be a foreign language or drawing, music, embroidery, dressmaking, house-keeping, cooking, painting or sculpture, is far better, in every point

of view, than to have only a partial knowledge of any number of things, however desirable either may be in itself. It is to be hoped that the day of superficial accomplishments is doomed. If the schools of the Institute are thus indirectly aiding in promoting in the community a purer taste in matters of art, and a truer idea of the value and dignity of thorough work by all who assume to study art, they are indeed doing most valuable service.

REPORT OF PROFESSOR FUCHS.

BALTIMORE, June 7th, 1887.

*To the Chairman and Committee on Schools
of Art and Design of the Maryland Institute.*

GENTLEMEN: I have the honor to state that the Term 1886-87 of the Maryland Institute Schools of Art and Design has been in most all its essentials so nearly like the one preceding that I find very little to report that would materially differ from what is already known to you. After a school has been thoroughly organized and equipped, the work and progress of one year is generally but a repetition of another. The only change of consequence made this term was the extension of the regular course from three years to four. This was deemed expedient in order to afford students more practice in several important stages of their work, especially in figure drawing. The wisdom of this change has been made abundantly apparent, and the students also realize that it is greatly to their advantage. A majority of the special students now follow the same line of work as the regulars, and feel themselves lifted above the desire once so prevalent; to waste their time with tawdry, trashy work, such as copying lithographs and chromos, painting on tin pie plates, wooden snow shovels or other equally ridiculous baubles. The Institute is doing good work in educating the popular taste to a better appreciation of true art and every student exercises a certain amount of influence among his or her acquaintances by awakening an interest and stimulating a love for the beautiful so highly prized in every cultivated community. While it is the general verdict of all who are interested in the Institute, that since the introduction of systematic teaching the Schools have greatly improved, I hear also occasionally that persons have been advised not to go to the Maryland Institute, because the discipline is so severe and students are not permitted to study what they wish to learn. I first thought I would take no notice of these reports, which are either uttered in ignorance or by design, but as they are likely to reach persons who are unacquainted with the true state, I deem it my duty to say a few words on this subject.

A WORD ABOUT THE STUDENTS.

Students who intend to study art for a purpose will readily understand that it is necessary they should devote their time and energy to their studies, therefore all regular students in both day and evening classes are expected to attend the school during school hours and devote their time and efforts to their work while in the class; is this otherwise in any other school? As to special students, I do not see how a more liberal policy could be pursued than that which is current at this Institute. They are under no restriction whatever, except that which is hardly necessary to mention to any young lady or gentleman: to observe proper decorum while in the school. Their time is entirely their own, they may come in as early or late as they please, leave when they feel like it, attend one day a week or every day, follow the study of any special subject, or take part in any exercises of the regular students, and have the assistance or criticism from their teachers any time during the school hours; could we offer more?

It is true, students are expected to do their own work, although teachers do sit down and show the handling and manipulation of the medium in which they work whenever necessary, but teachers should not do the students' drawing or painting for them, and surely all who come there to learn something about art would prefer to do the work themselves, so that when they have finished a drawing or painting with the help and assistance of the teacher, they could do another equally well by their own skill and knowledge. The course of instruction in the regular classes has been fully explained in a former report and remains substantially unchanged except inasmuch as more time is devoted to figure drawing in class B and also to oil painting in class C, where every student now paints six certificate pictures against three last year. The work of the students in all the classes is generally quite equal to that of last year, most of the oil and water color paintings and figure drawings are better, and the amount of work done in both day and evening schools is far in excess of any previous year since I have been connected with the Institute.

The total attendance in the day schools is given as 227, and additions of models and studies purchased from the residue of the donations of the Messrs. Garrett two years ago are recorded.

The pupils in the night schools have again given an excellent account of themselves. The attendance has been very regular even the stormiest nights, though many come a great distance, and all are thoroughly interested. The perfect order in the classes, the zeal and industry with which the four hundred young men apply themselves to their studies, and the amount of work they have done during the five winter months has been a revelation to many who visited the rooms during the term, yet there are comparatively few, outside of those immediately connected with the Institute, who have any idea of the great boon these night schools are to so many young men, especially artisans, who work during the day and zealously devote all their spare time to learn a useful and to many of them indispensable art.

The attendance on the night schools is given as 403.

The number of graduates from the night schools is by far the largest since the establishment of the Institute Schools. The highest number reached in any former year was 22, in 1885; this year we have 38, and I can say with much pleasure that every one has fairly earned his diploma. The entire works of each graduate are on exhibition, open to inspection by all who desire to examine them.

In conclusion, permit me to state: that being familiar with most of the leading Industrial Art Schools in other cities, I can say with confidence, that nowhere are the branches included in the curriculum of the Maryland Institute taught more thoroughly than at this school of Art and Design, and I am proud to say that a more efficient and conscientious corps of teachers than that which constitutes the faculty of this school cannot be found. No technical school is ever complete in its appointments or material for study; our text books are models and objects, illustrating concrete things, which are the subject of study. The world moves on continually, and in order to keep abreast of the times we cannot stand still. In the technical, more particularly mechanical, world, improvements and new inventions are made every day, and in order to keep pace with this increasing ever-farther reaching progress, we are constantly in need of new models, books and other studies to take place of those which become worn out or obsolete. We are doing the best we can with what material we have at our command; we might do more if our needs could be supplied as they become apparent. One of the most urgent is Art Literature for the day school. Of this I regret to say we are entirely destitute. In the night schools we should have new models in the mechanical and architectural divisions, and a better arrangement of studios and lighting for free hand light and shade work. I have made this appeal before, in behalf of the large number of worthy young artisans and artists, with emphasis, and hope it may

not be in vain. What the Institute has done for its 630 pupils is shown by their work now on exhibition and which the public are cordially invited to examine.

* * * * *

With sincere thanks for the confidence, encouragement and valuable aid extended by the Committee, Board of Managers, and particularly our honored President, whose untiring devotion to the cause of art education and unswerving zeal to increase the efficiency and influence of the Maryland Institute is evident to all, and the well grounded conviction that, without their many sacrifices of valuable time and their material help, it would have been impossible to effect that steady improvement of its art and industrial schools, which has been so favorably noted by the Press as well as many prominent gentlemen and ladies in this city, whose familiarity with Fine and Industrial Art, both here and abroad, entitles their judgment to especial consideration,

I am, with great respect, faithfully yours,

OTTO FUCHS, *Principal.*

The address by Ex-Mayor Latrobe, which followed, fills ten pages. It is largely a statement of the importance and value of modern Technological Schools and of mechanical training, urging that in mechanical inventions and in industrial developments we are far ahead of the ancients and arguing that our mechanical achievements are superior, more "godlike" than their admitted triumphs in Art. It may be doubted whether the late Wendell Phillips, who was wont to discourse so eloquently concerning "The Lost Arts," would have quite conceded that the ancients were as ignorant of mechanical forces as Mr. Latrobe confidently assumes. Be that as it may, it is certain that, in urging the need and value to the rising generation of thorough technical training in the elements of mechanics and all industries, the eloquent speaker could hardly exaggerate.

He finds, in the early work of the Maryland Institute, the first attempts ever made in Baltimore to afford opportunity for such training; and points to the new City Manual Training School, and to the Technological School opened in 1885 by the authorities of the Baltimore and Ohio Railroad Company, as developments of those educational ideas. He says:

ADDRESS OF HON. FERDINAND C. LATROBE.

MR. PRESIDENT, LADIES AND GENTLEMEN: The Maryland Institute, founded in 1826, burned in 1835, and re-established in 1848, was the first and for many years the only continuous effort made in Baltimore to provide a means for obtaining any technological, scientific and theoretical instruction in Mechanic Arts. Dependent for its maintenance upon meagre annual appropriations from City and State, the small receipts from its scholars, and the occasional liberality of a few citizens appreciating its usefulness as a practical educator of youth, the scope of the Institute has been limited. While teaching in a thorough manner and with professors equal in ability and fitness to those of any similar institution in the country, artistic, mechanical and architectural drawing, it does not profess to give that practical instruction in the actual use of tools which is only obtainable in a fully equipped technological institute. A few years ago, a further recognition by the citizens of Baltimore, that, to quote from the report of a Committee of the School Board, "a knowledge of some industrial labor is as necessary as a knowledge of books, and

as the State and City acknowledge their obligation to teach children to read and write, they cannot deny their obligation to teach them to work, as the latter is as essential as the former," resulted in the passage of a city ordinance, approved October 20th, 1883, establishing the Baltimore Manual Training School.

THE B. AND O. TECHNOLOGICAL SCHOOL.

In 1885 the Baltimore and Ohio Railroad Company established a technological school for the promotion of a higher course of instruction for apprentices in the company's service, with headquarters at Mount Clare.* This latter school has lately leased the large double building on the corner of Hollins and Parkin streets. The advantage of theoretical and scientific instruction is making itself felt among those who realize that, in the present advanced condition of mechanical labor and active competition in mechanical ability, such instruction is necessary for developing the natural qualifications required to make the skilled and successful artisan. It may be true that the knowledge of how to wield the hammer, push the plane, handle the file, make the mortised joint or weld iron on iron, can be learned as heretofore by the apprentice from actual practice in the shop, but it is now generally admitted that theoretical instruction necessary for an intelligent understanding of the scientific reasons for producing results in mechanics, chemistry, architecture, and in the application of steam or electricity as a motive power, and in converting the raw material into the manufactured article, can only be properly acquired in the school room.

ADVANTAGE OF A DEFINITE TECHNICAL TRAINING.

The apprentice or journeyman who goes to the anvil, the lathe, the trip hammer, the furnace, or works in any great manufactory or machine shop armed with the knowledge obtained through the scientific training of a well equipped technological institution, will have far better chance of at least quicker, final success, than the man who picks up the manual use of tools only by what is called practical experience or horse sense. It is true that a certain amount of natural talent is as necessary for the successful mechanic as for the university scholar, but natural ability requires or certainly is greatly improved by cultivation and instruction in its efforts to become available for practical results.

A genius will occasionally appear setting all rules at defiance, but success in mechanics, as in art, literature, music and even oratory, is, with rare exceptions, only obtainable through education, cultivation and hard work. Great superiority in mechanics requires strong natural talent, but superiority is not, probably, as essential to profitable result in mechanics as in art, literature or music. "Any one who can learn to write can learn to draw," and industry, energy and perseverance, aided by ordinary intelligence developed by proper training and instruction, can expect to be rewarded by such proficiency in mechanic arts as will yield not only a livelihood, but, aided by business sagacity, will, as it has often done, open the road to fortune.

* * * * *

We live in a mechanical age; we are nearing the close of the 19th century. There are many in this audience who will look back upon this wonderful century. Whatever surprises the 20th may have in store, the steam century, as it will probably hereafter be called, will record an extraordinary progress in the history of the human race. * * *

* Unfortunately when the control of the Baltimore and Ohio road was transferred to the new Directors on the occasion of Mr Garrett's resignation from the Presidency, this admirable school was closed, and a very promising educational experiment was, temporarily at least, abandoned; its revival at some future time has been suggested as possible.

After giving several striking illustrations of wonderful inventions, he says:

What other evidences are necessary than those to which I have alluded to show that we are living in the mechanical age; that technical instruction in industrial pursuits required to produce the skilled mechanic is an essential part of the educational system, and that those callings connected with mechanical development are noble, useful and remunerative? In large cities the demand for skilled mechanics is far greater than for laborers in the so-called learned professions already overcrowded, and offering few opportunities for success. The field for mechanical knowledge and skilled manual labor is practically inexhaustible.

* * * * *

Where millions of men and women are thus required to use their hands, is it not extraordinary that so little attention, comparatively has been given to technological industrial education? In other words, that all systems of public instruction should not include education of the hands with education of the brains. The President of the Johns Hopkins University truly said, "the hand trains the mind, the mind the hand, and the eyes both."

An excellent treatise to be read with profit by every thinking citizen has lately been written by Dr. W. T. Barnard, an officer in the Baltimore and Ohio Railroad Company, upon technical education in industrial pursuits with special reference to railroad service. In it he says: "Teach the boys in public schools that to be a carpenter, a machinist or a moulder, is just as honorable, requires no less skill, and may be more profitable than to be a clerk, a doctor or a lawyer, and there will be hundreds of qualified applicants for apprenticeships in our best shops, and soon educated will take the place of uneducated labor, and intelligent mechanics will displace those refusing to learn more than they already know."

IMPORTANCE OF A JUST IDEA OF THE DIGNITY AND WORTH OF TECHNICAL SKILL AND KNOWLEDGE.

In the strife for worldly advancement necessarily following the rapid increase of population, care should be taken in the education of youths, not to prejudice them against manual labor; on the contrary, both public and private education should aim "to fit young people for industrial pursuits as well as for professions and clerkships, thus placing the former on an equal footing, in point of dignity, with the latter." In Baltimore it is especially desirable to direct public attention to the necessity for this technical instruction. It seems at last to be generally conceded that the future wealth and prosperity of the city is dependent upon manufacturing industries. It is true that commerce has done and will do much for us, but, as I had an opportunity of saying officially in 1877, "we should remember that it is not commerce alone, but commerce and manufactures together which will insure the future prosperity of this community." If this is so, every effort should be made to encourage this source of wealth and power.

TO EXEMPT MANUFACTURING PLANT FROM TAXATION IS A WISE POLICY FOR BALTIMORE.

For this reason, in my judgment, it was wise to place manufacturing industries in Baltimore on a plane with those in neighboring cities, by exempting from taxation all plant used for manufacturing purposes. Abandon this policy, and we proclaim at once to those contemplating the establishment of a manufacturing industry, that, if they select Baltimore as a location, they will encounter a tax not imposed in Philadelphia, Wilmington, Del., or Pittsburg.

In these days of sharp competition and small profits, a very slight advantage will turn the scale. The policy of such exemption is an indication of liberal legislation in connection with manufactures. Better make it part of the fundamental law of

the state and thus prevent the loss caused by annual agitation for its repeal. An absolute requisite for manufacturing is skilled labor. Therefore, while proud of our public school system, and of the great university due to the liberality of one of Baltimore's self made citizens, let us remember, again quoting in part from Dr. Barnard, "if we fit young people only for literary pursuits and the learned professions, our industries must languish for the want of qualified persons to direct them, and the lack of skill and intelligence in the performance of manual labor necessary to the proper development of successful mechanics and artisans."

TECHNICAL EDUCATIONAL FACILITIES IN PHILADELPHIA NOTED AND COMMENDED.

One of the wealthiest cities in the union is Philadelphia, our near neighbor, whose present and increasing prosperity is due to its hives of manufacturing industries, where tens of thousands of thrifty operatives find employment. For commercial or manufacturing purposes not so advantageously situated as Baltimore, it has greatly aided in reaching its proud position by legislation encouraging investments of capital in manufacturing works, and in opportunities for technical instruction in such educational institutions as the Mechanics Institute, Spring Garden Institute, Franklin Institute, the Philadelphia School of Design, the Pennsylvania School of Fine Arts, the Pennsylvania Museum and School of Industrial Art, the Mechanical Department of the Pennsylvania State College, and the Philadelphia Manual Training School.

* * * * *

He then refers to the present development of art in this country, and the growing appreciation of it by the public, and closes thus, with a plea for drawing and for industrial training:

Every architectural structure, and every article, the construction or manufacture of which is due to the demands of comfort or luxury, begins with a design. The successful architect, artist or mechanic must thoroughly understand what has been called a "universal language," the art of drawing.

Let all, therefore, who feel an interest in the future of Baltimore, recollect that while the university, schools, libraries, benevolent institutions, monuments and harbor may make it a community of learning, refinement, charity, patriotism, trade and commerce, it is necessary to provide for its growing population ample means for obtaining mechanical and artistic knowledge, the capital of the skilled laborer and the foundation of those industries which will surely make the city prosperous and beautiful. This can only be accomplished through institutions imparting technical instruction in industrial pursuits.

A list of all graduates is printed at the end of the pamphlet containing the Thirty-ninth Annual Report (1887).

The graduates of the Day School, during the years 1873 to 1887, inclusive, number 53. Those of the Night School from 1857 to 1887, inclusive, number 339. Of these latter 206 took "Peabody premiums," while 18 more received "Honorable mention."

The disproportion between the large numbers attending and the few who persevere through the full course requisite to gaining a diploma, is very noticeable; the whole number of graduates during the thirty years here recorded being less than the number of pupils often in attendance during a single year.

Since the publication of this report (1887) the State Legislature, following the excellent example set by the city authorities, has

doubled the State appropriation; so that the Institute will now receive annually from State and city a total sum of \$12,000.

By the recent decease of the venerable Mr. A. S. Abell, the well known owner of the Baltimore Sun, the Maryland Institute loses a lifelong friend and benefactor. A legacy of ten thousand dollars was given by his will to the Maryland Institute.

The Fortieth Annual Report (1888)* contains the customary reports by the Board and by the principal of the Art Schools, and the addresses made at the annual commencement of the schools, which was held at the Holiday Street Theatre on the evening of June 5th, 1888. The catalogue of the school, with list of graduates and programmes of studies for the ensuing year, 1888-89, is bound up with the report.

The chief topics of the managers' report follow:

FORTIETH ANNUAL REPORT OF THE BOARD OF MANAGERS.

BALTIMORE, *April 18th, 1888.*

To the Members of the Maryland Institute:

The Managers of the Institute herewith submit their Fortieth Annual Report.

The Institute has for this year confined its work to the same departments on which its energies have been expended for the past two years, and has endeavored to increase, in every possible way, their efficiency and usefulness.

The Night and Day Schools of Art and Design have surpassed their work of former years, have instructed more pupils, have furnished better facilities for work, and have found as in former years, their students earnest, attentive and interested in their work. The pupils in the Night School numbered 481, being 78 more than in 1887. They were divided in classes as follows:

Free Hand Division.....	133
Mechanical ".....	210
Architectural ".....	188

The Night School opened October 10th, 1887, and closed March 28th, 1888, having been in session two weeks longer than the usual term.

The work of the school was substantially the same as last year, and the high point of excellence then reached, has been fully maintained. The reports of the behavior, attention, attendance and industry of the pupils are most satisfactory.

The number of graduates is estimated:

Free Hand Division.....	7
Mechanical ".....	8
Architectural ".....	7
Total.....	22

The Day School of Art and Design opened October 3d, 1887, and will close May

**Maryland Institute for the Promotion of the Mechanic Arts.*—Fortieth Annual Report Board of Managers. Address—Mr. Jos. M. Cushing, President. At the Annual Commencement: Report of Principal of the Schools of Art and Design—Address, I. Edwards Clarke, A. M.—Address, Prof. M. A. Newell—Graduates, 1888—Catalogue of Schools for 1888-89—[Baltimore, 1888—Printed by James Young, 114 South Street—Pp. 56 and 28.]

26th, 1888. The number of pupils now in attendance is 239. They are classified as follows:

Regular Students.....	70
Special Students.....	68
Saturday Students.....	98
Post Graduate Students..	3

As during last year, so doing the present year, we have to report most favorably upon the excellent behavior, industry, and devotion to work shown by the pupils in the Day School, and our belief that the results of their labor will fully equal the gratifying exhibition of last year. The number of graduates will probably be four.

The Commercial School was opened under the charge of Mr. Thomas W. Jamison, on October 4th, 1887, and will close April 10th, 1888. The price of tuition was slightly reduced this year. The number of pupils enrolled was 57, and the number in attendance is 43, being an increase of 16 over last year. There will probably be three or more graduates.

We have the pleasure to report that the Legislature of Maryland, at the session lately closed, increased by unanimous vote the appropriation to the Maryland Institute from \$3,000 to \$6,000 per annum, for the years 1888-89 and 1889-90. This appropriation will not be available until April, 1889.

The thanks of the Institute are due to the Committee of Ways and Means in the House of Delegates, to the Finance Committee of the Senate, and to the Legislature as a body.

The Committee on the Hall desire to make further repairs. The Committee on the Library report a small addition of books during the year, and regret the limited means at their disposal. The Exhibition Committee, in view of the fact that the Institute can no longer furnish such facilities, cordially indorse the movement among the citizens for the erection of a permanent building for exhibition purposes.

The other committees all report in favor of our present plan of concentrating all our means and labor on the Schools of Art and Design, Commercial School, Library, and care of building.

The Managers desire to express their appreciation of the valuable services of the Actuary, Mr. George L. McCahan, who, during this year as in past years, has contributed largely to the success of our Institute. The Institute owes most grateful thanks to Prof. Otto Fuchs and his able staff of assistants, by whose hearty and efficient labors the Schools of Art and Design have attained their present high reputation. The Board presents to you its summary of receipts and expenditures for the fiscal year up to August 31st, 1888:

RECEIPTS.

Regular receipts from Sept. 1, 1887, to March 31, 1888.....	\$5,706.50
City appropriation.....	6,000.00
State appropriation.....	3,000.00
Contributions and other sources.....	2,957.88
	<hr/>
	17,664.38

EXPENSES.

From September 1, 1887, to March 31, 1888.....	\$12,626.39
Estimated expenses to August 31, 1888.....	8,174.62
	<hr/>
	20,801.01

Showing a deficiency of about \$3,000, which will be met out of the increased appropriation from the State.

The Commencement of the Schools of Art and Design and the Commercial School, will be held at Holliday Street Theatre, on the evening of Tuesday, June 5th, at 8 o'clock. The private exhibition of the work of the schools for members of the press and invited guests will be open at the Institute on Monday evening, June 4th, at 8 o'clock. The exhibition of the work of the schools will be open to the public on June 6th, 7th, and 8th, from 10 o'clock A. M. to 10 o'clock P. M.

Full reports from various committees are herewith submitted.

JOS. M. CUSHING, *President*.

The commencement exercises were held as announced, and attended by a brilliant audience, filling every available space in the auditorium, while the whole stage was occupied by the graduates, the members of the Institute, and invited guests.

The character and numbers of the audience testified to the general interest taken in the Institute by the citizens of Baltimore. Dr. Morison, Provost of the Peabody Institute, was present, as customary, to deliver the Peabody prizes. The President of the Institute and Mr. Ferdinand C. Latrobe, the Mayor of the city, escorted the orators of the evening. The small body of graduates occupied the front of the stage, with the usual wealth of floral tributes in the foreground, while an excellent orchestra enlivened the exercises.

It was, in short, a typical commencement scene. The attention given by this great audience to the exercises, testified to the sincerity of the interest taken by the public in these industrial art schools; which, created and supported by the people themselves, have long been a recognized feature of the life of the city.

The President of the Institute, Mr. Joseph M. Cushing, made the following brief address and then felicitously introduced, in turn, the speakers.

ADDRESS BY MR. JOSEPH M. CUSHING.

LADIES AND GENTLEMEN: I have the pleasure of bidding you welcome, in the name of the Board of Managers of the Maryland Institute, to the 40th Commencement of the Schools of Art and Design, and the Commercial School.

This year, like the last, has been marked by a great forward impulse in the work and development of our Schools, made possible by the wise and generous action of the Legislature of Maryland, which, without a dissenting voice in either house, increased the annual appropriation to the Institute from \$3,000 to \$6,000. Mr. T. Harrison Garrett renewed his former gift of \$500, to be used for the purchase of models and school equipment. The late Mr. A. S. Abell generously remembered the Institute in his will, bequeathing to it a legacy of \$10,000, which the Institute has determined to permanently invest as the A. S. Abell fund, and use only the annual interest. We have also received generous gifts of valuable Art Works from William H. Perkins and William A. Wisong. For the first time in several years we are able to provide for our expenses without calling upon individuals for contributions. The extra appropriation by the Legislature will not be available until April, and will have been expended in advance. This will enable us during the vacation to procure extra models, make many needed repairs to our building, and generally improve our facilities.

We hope to offer to our students next year better advantages than ever before. The Century Company, of New York, has kindly placed with us as a permanent

exhibit 52 Artists' Designs from which the illustrations for the "Century" and "St. Nicholas" Magazines were engraved. The designs were sent to us framed and glassed, subjecting us to no expense but the cost of insurance; they are valued at \$2,000. They will be exhibited in special rooms at the Institute on the 6th, 7th and 8th of June. The Muybridge plates of Animal Locomotion will be shown at the same time. The usual exhibition of the work of our students in Free-hand, Mechanical and Architectural drawing, in Oil and Water Color Painting, in Figure and Charcoal Drawing, and in Modeling, will be open on the same days. You are cordially invited to inspect them.

Professor Otto Fuchs, the principal of the Schools of Art and Design, then read the following report:

To the Chairman and Committee on Schools of Art and Design of the Maryland Institute.

BALTIMORE, June 5th, 1888.

GENTLEMEN: In presenting to you this evening my fifth annual report upon the work of the Schools of Art and Industrial Drawing during the year just closed, I do not claim any great advance over that of last year. You may discover improvements in some departments, while other perhaps are not quite as good. This is not unexpected, for after having arrived at what may be regarded as the limit of our possibilities our resources and facilities for instruction, together with the average talent and attainments of students in the several classes must naturally determine the extent to which we can push the work along. One class may be exceptionally strong in numbers and ability this year and weak the next, while in another class the case may be reversed. The system and organization of the schools was as complete as we could make it according to our means last year, and as the same conditions prevailed during the one just closed, the results are substantially the same. The number of students in the Day Schools, was about equal to last year, also the number of teachers, the attendance as well as interest in the studies, all that could be expected, and the work of the students compares very favorably in quality as well as in quantity with any previous year. The applications for admission to the Night Schools, especially in the Mechanical division, were so much in excess of last year that it became necessary to fit up two additional rooms and make other changes for the better accommodations of the classes.

IMPROVEMENTS EFFECTED IN THE BUILDING.

The alterations and improvements made in lighting and ventilating the upper rooms in the front end of the building now occupied by the mechanical classes, have proved a great success and added very much to the comfort of pupils and teachers, and when the improvements in the arrangement of studies and lighting in the free-hand room, which are in contemplation this summer, together with the acquisition of new models and other studies are effected, there will be no similar institution in this country which offers more perfect facilities for study or comfortable accommodations than the Maryland Institute of Baltimore.

INCREASE IN THE TIME OF ATTENDANCE OF PUPILS NOTED AND THE CAUSES SUGGESTED.

The popularity of any institution is generally measured by the numbers who seek its advantages but the most conclusive evidence of expectations realized, is the proportion of those who remain to the end as compared to the number registered, and here I find from authentic information, that the Maryland Institute with its indus-

trial drawing classes, stands at the head of all similar schools in this country, from which I have been able to obtain statistics. The explanation for this is readily found and is due to three causes:—

First, the thorough organization, employment of competent teachers and systematic arrangements of studies, adapted to the practical needs of the pupils.

Secondly, encouragement to practice at home, stimulating a healthy ambition on the part of the pupils to advance and excel in competition with each other, and last but not least, a point to which President Cushing also recently alluded in an address before the Industrial Education Association at Johns Hopkins University, not to offer the tuition entirely gratuitously, the fee charged, though but a nominal one, is not a burden and makes the students feel that they are paying something for what they receive.

A HIGH STANDARD OF WORK BY PUPILS ENFORCED.

The works of the graduates now on exhibition at the Institute, are not specimen drawings specially selected, but comprise the entire work of every graduate, to show what he has done during the last year, and no one graduates from the school unless he has finished satisfactorily all the work required of him, and passed a rigid examination. The free-hand outline and charcoal drawings of ornament, still-life and antique heads are from the objects, as are also all the paintings in water color and oil, excepting landscapes. The mechanical sketches and working drawings of a steam engine are from actual measurements taken from the model, and the architectural drawings show the proficiency of the students in rendering a complete set of working plans, elevations and section of a building from a small perspective sketch, which gives them merely a suggestion of the design; this method of work requires a thorough understanding of the subject, and leaves no possible opportunity for mere copying. The entire time the students are engaged in one term at the night school, is about sixty evenings of two hours each, amounting in the aggregate to fifteen working days of eight hours each, which considering that all are but students and this their first effort in producing such a set of drawings, would be utterly inadequate; the fact therefore that these young men devoted nearly every evening during the winter months to their drawing, after having labored all day, as most of them had to do, certainly speaks well for their earnestness of purpose and deserves to be suitably rewarded. The same high compliment is due to the regular as well as many special students of the Day School, who are industriously at their work every day from 10 to 3 or 4 o'clock, during the eight months of the school term.

THE EXHIBITION OF PUPILS' WORK.

It may interest you to know that all the work now on exhibition at the Institute Hall, that of the night school graduates excepted, represents less than one-sixth of the entire work done in the classes during the term. The Committees of experts who were invited to examine the work of the graduates and award the prizes, consisted of the most prominent professional men in their respective branches, who gave their verdict after a most thorough and critical examination. The fact that all found great difficulty to discriminate between the different sets of drawings, on account of their uniformity, was, I think the highest compliment that could be paid, both to the attainments of the students and thoroughness of the system of teaching. That the advantages of such training as is given at the Maryland Institute schools to young Art students, artisans and apprentices, engaged in the various industrial occupations is in demand and duly appreciated, is abundantly attested by the continued large attendance, the steadily growing interest in their work, and the practical results which reward those whose talent, energy and ambition inspires them to accomplish what they aim for, namely: the skillful and intelligent use of their hands.

THE VALUE OF THESE STUDIES RECOGNIZED BY PRACTICAL MEN.

The importance which manufacturers and builders attach to the technical education of their apprentices, is also manifested by a number of builders of houses and machinery, encouraging their apprentices to attend our night schools, in many cases paying their tuition for them, one machine firm who employ a large number of boys even go so far as to make it obligatory for their boys to attend the mechanical drawing school. Many of our graduates are employed as draftsmen, designers, foremen and teachers, some in this city, others in various parts of the country, and in nearly all our large shops or manufactories are found mechanics who have been greatly benefited in their various occupations as artisans by learning how to draw and read the drawings, which they have to work by. The establishment of Manual Training Schools in the leading manufacturing cities, and special Trade Schools by Builders and Manufacturers' Exchanges, points with great force to the necessity of educating and training skilled artisans.

It has been many years since the apprentice system, which gave us thoroughly trained workers in all our active industries was abolished, meanwhile our manufacturers depended mostly upon immigration for their supply of skilled artisans, and as it is improbable that the old apprentice system will be revived, the industrial labor and drawing schools have become a recognized necessity. This fact is duly appreciated by the City Council and the State Legislature, who have both come to our relief, thereby enabling us to increase the efficiency of our schools. The generous legacy of our deceased friend, Mr. A. S. Abell, will also make it possible for us to acquire many greatly needed additions to Models and Art studies.

VALUABLE ART MATERIAL ACQUIRED BY THE SCHOOL.

The Institute has been particularly fortunate this year in receiving several valuable donations of Art works, drawings, &c., among the most important are, a set of one hundred plates of Muybridge's "Animal Locomotion," published by the University of Pennsylvania, in an elegant and substantial morocco port-folio, presented by Messrs. Wm. H. Carpenter and Joseph M. Cushing. A number of foliage studies in oil and photographic landscapes, after distinguished French artists, by Mr. Wm. T. Walters. Four books of modern Renaissance ornament by Mr. Wm. H. Perkins, also a number of original artists' designs and sketches in india ink and oil, sent us from the Century Company of New York. Two very valuable works were also purchased by the Committee, one for the artistic, the other for the mechanical department. The Superintendent of motive power of the B. & O. R. R. Company, has placed us under lasting obligation by presenting our mechanical department with a complete set of working drawings, consisting of a large number of plates, including general plan of the largest freight engine recently constructed at the Mount Clare Works.

I refer with pleasure and gratitude to these valuable gifts, and hope that other friends and well wishers of Art Education may contribute works of high merit to our Art Library and collection of useful material for study and reference, not only for the broader education of our students within the school, but also that these things may be accessible to other students, artists, artisans and connoisseurs of fine and industrial art, who are at all times assured a hearty welcome and ready access to whatever we may possess that can aid them in the prosecution of their studies or work.

VALUABLE AID ACKNOWLEDGED.

The large number of students and others who have been benefited through the instrumentality of the Maryland Institute Schools of Art and Design, owe a debt of gratitude to its Board of Managers, and especially to the President, whose untiring

zeal, innumerable sacrifices of money and valuable time, can only be fully appreciated by those who know of all that he and they have done to promote the cause of industrial Art Education.

To the Press, we are also indebted for a large proportion of the popularity which the Institute enjoys in this community, and for the teachers of both day and evening schools, I can say with satisfaction, the work of their respective pupils is the best scale to measure their efficiency, and I cheerfully add my approbation for their faithful services.

STATISTICS OF ATTENDANCE.

The number of pupils in the Day School during the term 1887-88, was as follows, viz.:

Regular students.....	70
Special students.....	68
Saturday students.....	98
Brought forward.....	236
Post Graduates.....	3
	— 239

Night Schools.

Free-Hand.....	133
Mechanical.....	204
Architectural.....	137
Post Graduates.....	7
	— 481

Total in both Schools.....720

Graduates in Day School..... 4

Graduates in Night School..... 31

Respectfully submitted,

OTTO FUCHS, *Principal.*

The President then introduced Mr. I. Edwards Clarke, of the United States Bureau of Education, Washington, D. C., who had been requested to deliver the annual address, and announced his subject as "The Message of Art." This address fills some twenty-five pages of the report. The following extracts comprise such passages as either relate especially to the Institute and to the city, or serve to show the general treatment of the main topic of the discourse.

ADDRESS BY I. EDWARDS CLARKE, A. M.

THE MESSAGE OF ART.

Mr. President, Gentlemen of the Board of Managers, Ladies and Gentlemen:

In the presence of this brilliant audience who have come together to bid these young women and young men "God speed," and have brought the odorous spoils or gardens and conservatories to add to the beauty and enhance the significance of the occasion, any words about the Institute, whose annual feast you thus honor, seem surely needless.

This scene, these happy faces, this great audience, speak more eloquently than any single orator could hope to do; however cunningly marshalled his ordered words.

Let us, however, consider for a moment why we are here. What is the significance of this Institute, whose great festal day we meet to honor? What relation does it bear to the Community? What has it done? What is it doing? What may we reasonably ask it to do?

In the early days of warfare when every new comer was a "stranger," and every stranger a foe, the people who then dwelt in Ancient Greece built their habitations round about some almost inaccessible height, whereon was set the temple of the tutelary Divinity, the treasure house of the city, and the buildings most prized, so that they should be most secure from hostile assault and furnish at need safe retreat to the beleagured inhabitants. Every little town and city in Greece had thus its Acropolis. In like manner in the middle ages, the Citadel, from some commanding height, dominated the town and surrounding country; at once a friendly stronghold and a threatening fortress. To-day, the Acropolis of our American Cities, the Citadels of our safety, are found in Institutions like this which we have here met to honor!

Every intelligent citizen of Baltimore knows the work of the Maryland Institute, and knows too, that so long as such schools for the building up of society are heartily sustained by all classes of your citizens, the delusive sophistries of "Socialist Agitators," the destructive activities of foreign "Nihilists," can find no foothold; for, as the freedom giving air of England was too pure for the breath of a Slave, so the vital health of Intelligent Industry is intolerant of the diseases bred of Despotism, Squalor, and Ignorance!

"Intelligent Industry," that is the primal key note of the Maryland Institute; and, because Industry to be intelligent must needs be artistic; the Maryland Institute fosters, promotes and teaches Art; Art, in its applications to Industries. I have said Intelligent Industry must needs be artistic; because Industries deal directly with uses and in perfect fitness for use inheres that harmony which is the essential underlying quality of all Art.

RELATIONS OF THE INSTITUTE TO THE COMMUNITY.

To give concise reply to our questions then, we may answer thus. The relations which this Institute bears to the Community are, first, those which go to the building up and preservation of that ordered life which alone makes a community possible; and, secondly, that its influence tends directly to the development and cultivation of those elements which add grace and beauty to external surroundings; and, so, add joy to the life of the Community.

As to "what it has done in the Past," the answer is simple. It has been the only direct teacher of artistic and scientific industry to generations of your citizens.

As to "what it is doing," ask these bright faces before you. These young women and young men, who have had the energy, the perseverance, the praiseworthy ambition, to learn the lessons set them year after year, till they have, finally, won the hard earned diploma which the Institute gives to its graduates.

They have learned the great lesson of the worth of long continued, persistent application; the value of thoroughness, the importance of accuracy, the joy of successful work.

Young men and women so trained, are a positive addition to the Wealth, Power, Dignity and Security of any Community. The training of a few such valuable citizens is a part of the work which the Institute is doing, but it is by no means all that it accomplishes; for as these graduates will tell you, there are many equally earnest scholars who for various reasons are not able to remain to win the diploma, but so far as they have gone, they have been just as thoroughly taught; and they all have had the lesson of the importance and worth of patient, faithful, artistic work, impressed upon them. Now, as every man and woman must be largely "self

made,"—for spite of all that parents, teachers, Institutes and schools can do for them, the progress and character of each individual depends, in the end, on his or her own individual efforts;—such lessons in the conduct of life, are invaluable.

DIRECT AND INDIRECT INFLUENCES OF THE INSTITUTE.

Thus it happens that the good influence of this Institute reaches a far greater number of pupils and workers, than are enrolled in its list of graduates. It is, to-day, training up hundreds of young men and women, in a knowledge of the right methods of study and work; more than this, no pupil can attend even for a single season the classes of the Institute, without realizing the prime need of accuracy in all industrial work. In these days of scientific precision "pretty near right" is no better, practically, than "all wrong." A "working drawing" for machine builder, carpenter, or cabinet maker, or a designer's pattern for weaving, must be as exact as the demonstration of a problem in geometry. Drill in industrial drawing means drill in precision; and precision is the very foundation of honest, thorough, enduring, industrial work. The boys in your Baltimore Manual Training School, are learning that essential lesson.

But, in addition, the pupils of this Institute can hardly fail to acquire something more precious, even, than mechanical accuracy, for their attention is drawn to the perception of the relations of proportions and thus they are led to see the harmony that exists between the parts of a well planned building; to observe the exquisite delicacy of the blending tints of blossoms; to mark the graceful curves of leaves and branches; the subtle grace in the convolution of shells; and so, by means of the close study of form which free hand drawing compels, and the discrimination of colors without which the art of the painter is impossible, their eyes are opened to see the varied wealth of beauty, never by them before dreamed of, which inheres in all the works of Nature, and must, of necessity, be present in all those works of Man, which are, in the least degree, worthy of admiration. That such harmony between the curves and proportions that give grace and beauty to natural objects does actually exist in those great sculptures and buildings which the common judgment of mankind accepts as Masterpieces of Art, they learn for themselves; as they copy the casts of Antique Statues, or the Capitals of the noble columns in the Orders of Architecture.

Thus, not only are their own lives enriched by this awakening to a knowledge of the beauty of the Universe; but, by means of their ever widening influence in the community, the standard of popular taste is being lifted up, and a more general appreciation of the beautiful on the part of the people, spread abroad year by year. Such are some of the direct and indirect relations of these Art Schools to this community. This, then, is what the Institute is doing; fitting women and men, to be producers in the field of the artistic industries, and home-missionaries of the Beautiful, everywhere.

The Community has the right to ask the Institute to continue in this good work and to develop it in the direction of Art training, while the Board of Managers have fully demonstrated the justice and wisdom of their appeal to the Public to endow this Institute,—to which they themselves have personally given so freely of their time and means,—with a permanent fund, sufficient to furnish the requisite equipment for its proper development.

VALUE OF ASSOCIATED EFFORT.

It is full of encouragement to all earnest workers for the advancement of the Race to see how the modest, humble efforts of a few simple men, busied in their several daily avocations but combining their forces for the attainment of some good public end, grow and prosper, and reach out their influences for good into waste places, and help the World by ways they had dreamed not of. * * *

Fortunately for Humanity moral health is contagious. Goodness spreads like an epidemic, and one philanthropist breeds many! As with the runners in the Antique Race, the flaming torch is tossed from one to another, and so, from generation to generation, the light of goodness is not quenched! In this city, whose annals glow with the record of generous givers, it needs only to recall that, where a McDonough went before, a Peabody, a Johns Hopkins, a Samuel Ready, and many another, followed in glorious procession; while, to-day, an Enoch Pratt calls his fellow-citizens to sit with him at the feast of books. Nor should the fortunate Citizens of Baltimore, who reap these bounteous harvests, ever forget that the willing workers of the Maryland Institute were pioneers in these good works.

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To-day, the Maryland Institute gives itself to the work of Art instruction; and, in so doing, recognizes fully the truth, that all Art is one; whether busied about making the humble utensils of daily use, constructing and adorning the homes of the people, or embodying the highest ideals in Painting, or Statue, or grand Cathedral. So comprehending this essential unity of Art, the solidarity of the Arts, the Institute does not hesitate to busy itself in teaching the humblest, simplest duties in the service of the common purpose of that wide embracing Art which is, at once, the Benefactor and Beautifier of Human Life on Earth. It has, therefore, seemed to me pertinent to this occasion to offer a few suggestions as to what it is which Art has to say to us modern men, in relation to our actual life here on Earth.

WHAT HAS ART TO DO WITH LIFE?

I ask you then to consider, for a little time, with me, the meaning of this message which Art brings to our modern life. What is this message? Why should we seek to understand and to promote Art?

This question comprehends much of the philosophy of life. To give it a satisfactory answer we must first ask ourselves for what are we striving in our daily life of toil, of anxieties, of hopes and fears? What are the best uses of our earthly life? Why are we here? To have answered these questions satisfactorily, were to have solved the whole problem of living; the unguessed enigma which so perplexes the generations!

It is not proposed to essay such ambitious task as to attempt the solution of this unknown purpose which is, by many deemed the unknowable; but, simply, to suggest how man while living upon this earth, may make his life saner, sweeter and happier, by bringing it more in harmony with the beautiful and ennobling surroundings of Nature.

So far as human destinies are affected by human actions, so far as the lives of individuals are limited by the conditions and enactments of the Community; so far, in short, as relates to all the circumstances affecting the life of Man on Earth which Man originates and controls, these questions are proper and legitimate subjects for our thoughtful consideration,

We know that life means, to millions, an unending round of crushing toil; a struggle so terrible, that to secure enough of the fruits of the bounteous earth to keep soul and body together, leaves no time or strength for aught else. Every human soul feels that this is a fearful wrong done to each individual sufferer who thus toils hopelessly! Thoughtful men and women, all over Christendom, are wrestling with this perplexing problem. They see that Science, and Invention, which, on the one hand, have done so much to improve the sanitary condition of man's environment, and have added so largely to the comfort and convenience of the appliances of living, and to whose future discoveries and uses the Imagination even, can set no bounds, have, on the other hand,—by their direct promotion of the power of material production in manufactures and their wonderful development of the ma-

chinery of distribution,—brought about a condition of affairs which has already reduced large numbers of human beings to a condition hardly differing from that of chattel Slavery except in name; since the service of attendance on the tireless machine is as exacting, and the share of the toiler in the results of the toil is, in many instances, no greater. Commercial Greed, developed by the possibilities of this wonderful facility of production and distribution, grows rapidly indifferent to the sacrifice of all that makes life desirable, which it necessitates on the part of the workers! All things at present point to an ever increasing multitude of such hapless lives.

If such conditions are the inevitable accompaniments of the progress of our modern civilization, the fact is portentous and menacing.

To our question: Is there for Humanity no escape from the catastrophe which must inevitably result if such conditions increase? Art makes answer. There is; to a people with enough of courage, of unselfishness, of power of renunciation, and of sanity, to accept it!

This can only happen by a change in the general estimate of what are the most desirable objects to be striven for in this life. Instead of, as now, engaging in a mad competitive race for wealth, it must become common for men to busy themselves in a sincere endeavor to lead rational lives. To realize, and act in accord with such convictions, that life has much to offer in the way of employment, and of enjoyment, for which the mere pursuit of wealth alone, is a miserable and unsatisfying substitute.

In any event they should, at least, sufficiently realize the value of the Beautiful, and the possibility, by the aid of Art and Science, of so adjusting their improvements and enterprises, as not to so needlessly disfigure and despoil the charming Natural features of this glad some Earth, as to deprive it of all joy-giving power.

Their eyes should be opened to see the relations which must ever exist between man's erections and Nature's surroundings, and how, with a little forethought, each may serve to enhance the beauties of the other; so that their buildings should no longer be mere masses and blotches of ugliness, marring the landscape and blurring the sky; that their roads should not be death traps, set amid the scenes of desolation, as are so many of the railroads; that their dwellings shall not be either pretentious houses of superfluous luxury and heedless waste, or sordid hovels of penury.

One message which Art brings is, then, this; that if any people will seriously set themselves to preserving, not impairing, the fair face of Nature; to keeping the skies free from soot clouds, and the streams clear from foulness; and will, further, strive to elevate and dignify all human lives, instead of only seeking, as now, to accumulate each for himself the most money, in absolute disregard of all these essential conditions; then, they will find that Health, Innocence, Integrity, Beauty, Leisure, Cheerfulness, and Mirth, all the Virtues and Graces, long banished, will joyfully return, to make Life on Earth, once more, a beautiful experience!

Over and over again, Theologians have reiterated the assertion that the "Curse of Labor" was inflicted on man as a punishment for Sin. Yet who does not know that *Occupation* is the necessity and delight of Man? That the absence of it, is destruction?

It is the kind, the object and the amount of labor, which are the important conditions; and which transform it to a Curse, or a Blessing, as the case may be.

The chief message which Art brings to our modern life is the announcement of the truth that Labor can be made a delight and a blessing to all.

HOW LABOR MAY BLESS BOTH PRODUCER AND CONSUMER.

This can be done by insisting that all the work of Man's hands shall be Art work; that the buildings he builds, the bridges he throws over streams, the furniture he makes, the utensils he contrives, the cloth he weaves, shall all be Art work made

for use ; that is, honestly made, so that they shall endure, and artistically made, so that they shall give delight. Now, since there was once an age when all such work was Art work, as the discoveries of the remains of Architecture, domestic utensils, and cunningly wrought, or carven, treasures of the Ancients, have abundantly shown ; it were a humiliating confession for the present race of men to deny its possibility.

In view of this universality of Art work, both during the remote Classic Times and throughout the Middle Ages, we are justified in the conclusion that, to apply the Arts to the creation and adornment of useful things, is a legitimate work of the artist ; and, such is the divine harmony underlying and pervading the Universe, that the Unity of the Arts is clearly apparent in all true art work. This truth, in the olden mediæval days, was so thoroughly comprehended that it was never questioned ; for the same Artist carved an "Apostle spoon" or planned a great Cathedral with equally reverent and joyous spirit.

So, Mr. President, may we hope that the students in your Night Classes, earnestly studying the elements of the Science and Art of Architecture, or of mechanical construction ; and those who, in the Day Classes, draw or model from the casts of the famous Statues of ancient Artists, or strive, with pencil and pallet, to learn how Nature shapes the leaf and colors the petal, are all learning the one lesson which Art has to reveal ; and that is, that he who would best deserve the high title of "Artist," is he who most clearly perceives that true Art is ever in harmony with Nature ; that Man's best Art is but a feeble suggestion of the perfection of the Great Artist and is in accord with His works.

The absence of any care to preserve the natural beauty of their surroundings on the part of English mill owners ; Mr. Ruskin's eloquent protests against this criminal disregard, and the subsequent efforts at Art training by the English Government for the sake of their manufactures, which, by reason of this very indifference to the surroundings of the designers, had soon deteriorated, as Ruskin had foretold, were then alluded to, the Governmental Art Education efforts having been often recited.

The matter to which I wish to call your attention, namely, the disastrous effects of a careless disregard by man of the beauties of Nature when making his so-called improvements and erecting his buildings, has not been thus frequently brought to the attention of American audiences.

After describing the growing ugliness of such English scenes, and of the suburbs of English towns, as pictured by recent observers, and which seem to more than justify Mr. Ruskin's prophetic warnings, and then sketching the ugliness which prevails in the surroundings of most American railroads ; the speaker, by contrast, proceeded to call attention to some of the beautiful features of the Monumental City, as follows :

That it would have been possible, by the exercise of a little forethought and some extra cost, to have had the utility of the railroads, without the defacement of the fair face of the country through which they pass, and without exposing to every traveller all the ugliness and squalor of back yards and city slums, it is not unreasonable to believe.

The beauty of the surroundings of some European roads, and the charming flower beds and turfed cuttings about the artistic "Station" buildings on some of the lines running out of Philadelphia, show that it is perfectly possible to replace ugliness by

beauty when kind Nature is eager to make the grass to grow and the flower to bloom! Hence, the most vital message of Art to man, in relation to his surroundings, is the injunction to work ever, in consonance with Nature!

CHARMING VISTAS AND NATURAL BEAUTIES OF BALTIMORE.

This audience, can readily estimate how much natural beauty, enhanced by Man's care and Art, adds to the delight of Life; for, fortunately, the beauties of your "Monumental" City, set on its rival hills, with their far out-looks across intervening valleys and over clustering house-tops to the builded heights beyond, can never be quite obscured by any blunder of men's ignorance or greed.

The worth to the City of the glimpses from Charles Street of the picturesque heights of "Old Town" caught through the cross streets as, going north, one climbs towards the towering Monument to Washington that closes the vista before him, could hardly be reckoned in coin; yet, what loyal Son of Baltimore would be willing to have them obscured?

Who would give up the privilege,—which all can have by climbing Federal Hill, or going to Patterson Park,—of looking on the free waters sparkling in the sunlight, leading the eye across the long stretch onwards to Fort McHenry,—endeared to the Nation, forever, by the genius of a Son of Baltimore?

Who would consent, for the benefit of the City Treasury, to sell the broad acres of Druid Hill Park; in order that the majestic oaks could be felled, and the cool, beautiful lawns and sloping hill sides changed into hot city streets with their crowded buildings?

Who would wish no more to see, dancing in the sunlight, ever leaping upwards like the undying aspirations of Man's spirit, that mighty, upspringing column of glistening foam, swaying and bending to the breeze with infinite variations of graceful curves,—like the plume of Beauty on helmet of Warrior,—the unchanging emblem of Purity, Power, and Grace, that ever lifts itself to the sight of all men in eloquent protest against their forgetfulness of the Beautiful?

Who would change that charming vista of gardens sweeping down the slopes of Eutaw Place, glowing in the sunlight with the shimmering splendor of the blossoms clustered in rich masses of color; odorous and mystical by moonlight, as the flowers yield their fragrance to the dew; and ever, musical with the cool murmur of the fountains;—for the broad stretch of noisy pavement which would be there, had not some one cared enough for the beautiful to prevent it?

Who would wish to do away with the few scattered Parks,—(charming oases of grassy verdure and grateful shade, amid the dreary deserts of stony streets,)—which make beautiful remote quarters of your city, and call around them, by the attraction of a proper and natural affinity, the clustering spires of churches;—as if all sects of Christendom sought alike that Divine Being whose presence inheres in the upspringing grass and the o'er shading tree, and with whose messages all Nature is vocal?

In the recital of these proofs of their love of beauty, the dwellers in this charming city may well take pride; nor is it surprising that the city, which so far preceded all other American Cities in erecting noble public works of Art as to be named the "Monumental" City, *par excellence*, should have shown such appreciation of the things which make for beauty.

ART COLLECTIONS BELONGING TO CITIZENS OF BALTIMORE.

It is, besides, not to be forgotten, that one of the earliest and most famous of the private collections of Art, in the United States, was made by Mr. Gilmor, of Baltimore, and that, from that day to the present time, one or more of notable Art collections have found a home in this City; while, to-day, the varied and valuable collections of Oriental Porcelains and European Paintings, which have been acquired

through years of intelligent collecting by Mr. Walters, and among which are many of the characteristic works of the greatest modern masters, are, perhaps, as well known in the Capitals of Europe as in the Cities of America. One such collection confers distinction upon the town, or city, the world over, fortunate enough to include it among its attractions. This single fact is, in itself, the strongest possible evidence of the potency of Art, of the value put upon Art works in the estimation of Mankind, and furnishes a high incentive to any community, to inaugurate and promote education in Art.

In the lists of American Artists, living and dead, the names of those of Baltimore, hold no inferior place.

While it might not be easy to trace the exact relation between the efforts of this Institute and these artistic results which have just been recited; it is, nevertheless, true, that the men whose names are most closely associated with the Art development of the City, have been, also, actively connected with the Maryland Institute. The list of these, includes Artists, Architects, and Art Patrons.

In illustration of the appreciation of art by two leading European nations, France and England, the speaker showed and described an exquisitely printed and illustrated elementary school book, on the history of art, designed for primary school children in France, and followed this by quotations from the art lectures of William Morris the English poet and art worker. He then said :

Long ago I took for a motto to a work on which I was engaged, the following sentence, which occurs near the end of his opening lecture on "The Lesser Arts," and which embodies the substance and aim of all his teachings; as it does, as I think, the purpose of this Institute in founding and supporting its Art Schools. It certainly expresses the reasons of my own interest in these movements and of my willingness to stand here to-night. I was not a little interested to observe that the authors of the school book I have just spoken of, have taken the very same sentence and translated it into French for the motto to *their* book. It is this : "I do not want Art for a few, any more than Education for a few, or Freedom for a few."

That is the key note of the thought and purpose of those in the United States, who are seeking to have Industrial Art Drawing taught in all schools.

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HOW LOVE OF ART AWAKENS SYMPATHY WITH HUMANITY ILLUSTRATED.

It is suggestive that two such Men, as are Ruskin, and Morris, have been led by their interest in Art, to take Active interest in the living surroundings, material welfare, and physical condition of the working people. Ruskin, left unfinished his charming writings on Art, to devote himself to the dry details of Political Economy; Morris, abandons his task of retelling, in flowing English verse, the old legends and myths of all races and ages, to try and relieve the misery about him; he seeks to lift up the common people of England.

Art, then, has led in these two notable instances, to the exercise of a practical Christianity.

These Men both saw how incongruous was this modern industrial life,—serving only competitive Commerce, and so, given up to greed—with the development of any true ideals of Art; therefore, they were led to study the reasons why, with all the advance of modern Science, the lives of so many millions of hopeless toilers were bare, and barren, and beastly. A life as openly unchristian, in high classes and in low classes, as it was inartistic and devoid of beauty !

Surely, a study and an occupation which thus leads directly to such efforts to lift up the Lowly and to aid the Wretched, is worthy of serious consideration.

Morris, rightly claims that there can be no real Art, unless all participate in it. No exclusive class of the people can know and enjoy Art by themselves alone. Art must be by, and for, the people; and he points out that the great monuments were made by many co-operative Art workers, and not simply designed by single great Masters.

ART MUST BE GENUINE TO BE EFFECTIVE.

He shows, as Ruskin had done before him, how genuine Art work, capable of giving real pleasure, must have been happy work; and as I have already suggested, how Art work surely develops the personality, the individuality of the artist; so he shows how personal it is, and he takes occasion to say that there is no such thing as "Cheap" Art, which some benevolent people seek. "Yet," he says, "to my mind real Art is cheap, even at the price that must be paid for it. That price is, in short, the providing a handicraftsman who shall put his own individual intelligence and enthusiasm into the goods he fashions."

The test he gives to Art work, whether in the Lesser or the Higher Arts, is that it must be work which gives pleasure to the "maker and the user." It cannot give this to the buyer, unless it has already given it to the maker.

In the processes of modern mill manufacturing, whatever material is wrought, whether metal, wood, or woven stuffs, in the making of which the machine is the active agency, and the human being only the automatic attachment, there is little room for the play of those personal emotions of delight which make the joy of creative work; and therefore, machine made things, however good the artistic design of the pattern,—which in itself may have given joy to its designer,—lack the capacity to give such pleasure to the machine attendant, and so fail of the highest Art quality.

How different it is with Artist, and Artisan! Unless they do take pleasure in their Art work, unless they endow it with thoughts and fancies, unless they give to it all their skill and taste, it will be comparatively worthless. No one will care for it, if *they* do not. No one will take pleasure in it if they did not first take delight in moulding the subtle curves, or in tinting it with delicate color, or enriching it with costly inlay of gleaming metal, or weaving into its strands glowing with color, some quaint fancy, or carving it into some noble or grotesque form, or, if it be some utensil for humble use, fitting it with the most convenient handle, and giving to it some loving touch of tool or brush, to make glad the user!

ART WORK DEVELOPS AND DIGNIFIES THE INDIVIDUAL WORKER.

Is it not clear, then, that the tendency of this creative work is just as decidedly in the direction of the development and growth of the worker, as the machine tendency is to the contrary?

So, one Mission of Art to our day is to give increased joy to living; by teaching Men both how to take pleasure in producing, and how to find happiness in possessing, artistic surroundings.

Art would show Man how to substitute for task work,—work done in haste, done from fear of starvation else,—which much of the work now is; work in which the maker and user may both delight. It must, then, be thorough and honest work, for which the worker is proud to be held responsible.

TRUE ART ANTAGONISES LUXURY.

Again, our author declares that Luxury is the deadly foe of Art, and that people can readily have good Art about them, if they will cease to buy and use needless things.

The word Art speaks our generation is, then, an appeal for Simplicity of Living. "Plain living and high thinking," as the old Philosophers inculcated. Morris says: "Have nothing in your house which you do not know to be useful or believe to be beautiful." What an iconoclastic motto for our modern homes! What multitudes of trashy ornaments that spirit would relegate to the garret, and the gutter!

Such, then, are the reasons which, in the judgment of these authorities, make Art knowledge, and Art work, desirable.

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The closing passages of the address follow:

To annihilate Time and Space, that seems the one great purpose of the modern man. Well, when that is accomplished, what is gained? Is Life any sweeter, or happier, for this incessant hurrying?—are the lives and limbs of the passengers on the flying trains safer in going from place to place? Is this mad race against time conducive to thoughtfulness? Does it tend to wisdom? And all this making haste to be rich, does it give these men time to be more honest, more just, more generous?

Is it not worth while to pause long enough to, at least, ask ourselves these questions?

Now the word Art has to speak to this pushing generation, is in no accord with this hurry, this maddening race of Competition which so characterizes the present age;—this eager desire to produce things by wholesale, and to induce millions to buy them in haste; so that, immediately, other like things can be produced and so on, *ad infinitum*. It is the old story of Slavery, the Planter bought more land in order to raise more cotton, and bought more Slaves in order to work the land, and so the vicious circle rolled on and on, till it brought its own foredoomed and foreseen destruction.

ESSENTIAL CONDITION REQUISITE FOR ART WORK OR FOR ANY REAL LOVE FOR ART.

The Artist cannot do thoughtful work, honest, thorough work, work which will endure, nor can he take delight in his work, if he has to constantly watch the clock in a race against time. Nor can any one take pleasure, or delight, or satisfaction, in seeing any work of Art, however much they may pretend to do so,—who has not time to consider it and to know it, to listen to its message, to live with it till its beauty becomes a part of life.

The dictates of Fashion, which change the movables of the Mansion with every whim, are clearly incompatible with any such Art work, or Art-loving. The eagerness for novelties, which leads to the acceptance of the unusual, the grotesque, the ugly, in the place of the beauty of Art, on the plea that it is "odd" and "unique," indicates anything, rather than a genuine knowledge or appreciation of Art.

Let us hope that one marked effect of the lessons of this Institute, will be to substitute that sober appreciation and true love for Art, which is essential to its growth; in place of the feverish search for some new sensation, which is fatal to all true Art progress.

HOW SERIOUS ART APPRECIATION MAY TEND TO CONSERVE THE HIGHER INTERESTS OF MAN.

In this stress of Modern Life, so menacing to Man's higher interests, we are forced to consider how, between the materialistic tendency of this Age of Machinery with its portentous power to consolidate masses of Humanity into working forces, crowding all joy and leisure out of Life, as it crowds human beings into close and fetid hovels, and crushing out all opportunity for individual development by unending, hopeless, monotonous toil,—and the opposing tendency of the development of that Art faculty in Man, implanted in every human soul; the nobler faculties of our human nature may be conserved! How, amid these contending forces, the Men and Women of our generation, can make for themselves a little breathing

space of Safety, like the Mediæval "Truce of God," during which all warfare ceased; can win a little leisure, in which to look on God's beautiful Universe, and to make Life glad with Human Love and Companionship; to dignify and adorn it with noble and beautiful surroundings. How, in short, sensible human beings shall so live as to make the Life of Man on Earth something other, on the one hand, than the unthinking Existence of the Animal; or, on the other, something nobler and more joyous, than the imbruted or agonized endurance of the Slave.

We have seen that Art had this in common with the divine message of the Judean Peasant, that its appeal is personal. It speaks to the single soul. It recognizes the Individual.

As the Word, once spoken in Palestine, has had power to lift up the humble and to loose the fetters of the bound; so, to-day, Art, with informing impulse, transforms toil from pain to pleasure!

It whispers to the stooping Laborer, and he stretches up to the full stature of a Man!

It breathes, and the Poet sleeping in all men, awakes!

By its potent influence, the Singer sings, the Artist creates, and all Mankind rejoices!

It gladdens, dignifies, and ennobles Human Life.

The Message of Art, is the Enfranchisement of Man!

It summons him to behold the Beauty, Order, and Significance of the Universe!

It teaches him how to surround Life with Beauty; how to live in harmony with nature; and awakens his understanding to a recognition of the truth that all Natural Beauty is but the expression of Spiritual Beauty,—a dim Shadowing forth of the Divine Archetype of the Creation!

This part of the exercises ended with an address to the graduates by Professor M. A. Newell, State Superintendent of Education.

The address, as printed in the report, conveys but the barest suggestion of the charm of the speaker's words, since, like all born orators, he improvises and pays little heed to his notes; resembling, in this, the late Henry Ward Beecher.

His opening words as given in the report follow:

ADDRESS BY PROFESSOR M. A. NEWELL, L. L. D.

YOUNG LADIES AND GENTLEMEN: You have at last reached the goal towards which you have been advancing for several years. I congratulate you upon your achievements; but, if I thought that your work was to end with the honors of this evening, there would be no cause for congratulation, but rather for pity. I most sincerely believe that, for all of you, this evening shall prove not a *conclusion*, but, in reality a *commencement*. Should it prove otherwise, we should have good reason to distrust the soundness of the principles in which you have been trained. It is to the future more than to the past that the Managers of this Institute look for their rewards and justification.

You will receive from the President of the Institute the certificates which bear witness to your industry and skill; but we hope that you will prize still more than these diplomas the consciousness that you have been trained to such accuracy and honesty of work as will not only insure your future progress in Art, but will manifest themselves as part of your character in whatever course of life you may be called to enter.

Then, amplifying and illustrating his theme, the speaker delighted his audience by the appositeness and eloquence of his too brief

periods, as he pictured an incident of travel in Great Britain, when, as once to gain a famous view, he was climbing on foot a steep hill on the road from Arrochar to Dumbarton. A military road, made by soldiers under General Wade, wound up this hill for three miles from base to summit. It was one of those admirable McAdamized highways, the triumphs of scientific road making, rare in rural districts of America, but not uncommon in European countries, and he was much impressed at meeting with such a perfect example of engineering skill in such an apparently unfrequented place. Excellent as was the roadway the steep ascent was toilsome, and welcome indeed was the surprise when he came, halfway to the summit, to a carved granite seat, as lasting as the hill itself, set there as a resting place for weary foot travelers, and inscribed "Rest, and be thankful!" "So," he said, addressing himself to the bright-faced graduates, "this occasion, like that wayfarer's seat, marks but a momentary resting place; is but a midday bivouac, from which you may rise refreshed to resume your onward march. These diplomas, this festal occasion, do not mark the goal of achievement; are not the aim and end of ambition, but only a well-earned moment of rest and thankfulness. What you have gained is comparatively worthless if it prove other than a stimulus to exertion; an incentive and means of further progress!"

After urging such of the graduates as could do so, to avail themselves of the free post-graduate course offered them by the Institute, the speaker closed, as follows:

In conclusion, I do not wish that these graduates shall carry off all the honors and receive all the compliments. On behalf of the teachers and other members of the Institute, I desire to say that all the classes, both of the Day and Night Schools, deserve to be specially mentioned for their punctual attendance, their devotedness to their work and their exemplary behavior.

The distribution of the diplomas by the mayor of the city, and of the Peabody Medals by Provost Morison, followed, amid great enthusiasm, as their friends in the audience recognized and applauded the recipients.

The official list of the names of the members of the Board of Managers and of the standing Committees for 1888-89, follows:

MARYLAND INSTITUTE FOR THE PROMOTION OF THE MECHANIC ARTS, 1888-89.

BOARD OF MANAGERS.

Officers.—JOSEPH M. CUSHING, President; GEORGE R. SKILLMAN, Vice President; JAMES YOUNG, Secretary; EDWARD W. ROBINSON, Treasurer.

MANAGERS.

Term expires 1889.—James H. Bond, Samuel Eccles, jr., John L. Lawton, George H. Pagels, Robert K. Martin, Samuel W. Regester, William H. Shryock.

Term expires 1890.—Alexander L. Spear, William H. Perkins, Joshua Lynch, G. Harlan Williams, Ernest Hoen, M. A. Newell.

Term expires 1891.—John M. Carter, T. P. Perine, James Pentland, Samuel R. Waite, Ferdinand C. Latrobe, David L. Bartlett, Ernest Knabe.
George L. McCahan, Actuary and Librarian.

STANDING COMMITTEES, 1888-89.

On Exhibition.—John M. Carter, Chairman; G. Harlan Williams, Secretary; Robert K. Martin, John L. Lawton, Samuel W. Regester, George R. Skillman, Ferdinand C. Latrobe.

On Schools of Art and Design.—James H. Bond, Chairman; John M. Carter, Secretary; John L. Lawton, William H. Perkins, Robert K. Martin, Ernest Hoen, Ernest Knabe.

On Lectures.—M. A. Newell, Chairman; William H. Perkins, Secretary; G. Harlan Williams, Samuel Eccles, jr., George H. Pagels, David L. Bartlett.

On Library.—G. Harlan Williams, Chairman; William H. Shryock, Secretary; Joshua Lynch, James Pentland, Ferdinand C. Latrobe, Samuel Eccles, jr., Samuel R. Waite.

On Hall.—Alexander L. Spear, Chairman; Robert K. Martin, Secretary; James Young, John L. Lawton, Samuel Eccles, jr., James Pentland, Samuel W. Regester,

On Commercial Department.—T. P. Perine, Chairman; James Young, Secretary; M. A. Newell, Samuel Eccles, jr., G. Harlan Williams, George H. Pagels, Joshua Lynch.

Executive Committee.—Joseph M. Cushing, Chairman; John M. Carter, Secretary; James H. Bond, M. A. Newell, G. Harlan Williams, Alexander L. Spear, T. P. Perine.

On New Inventions.—George H. Pagels, Chairman; John L. Lawton, Secretary; Edwin Bennett, Samuel Eccles, jr., George L. McCahan, Robert K. Martin, David L. Bartlett.

The 41st Annual Report of the Board of Managers,* contains the report proper by the Board and the report of the year's work in the schools usually read by Professor Fuchs, the principal of the Art Schools, as a part of the regular commencement exercises. The commencement addresses which are commonly given, do not appear. Mr. John K. Cowen, is announced in the managers' report under date of April 17th 1889, as the orator at the coming commencement to be "held at Holliday-street Theatre on Tuesday, June 4th."

The final twenty-eight pages of the pamphlet are given to the announcements of the various courses in the schools, and to a list of graduates in the "Day Art School," and in the "Night Classes in Industrial Art."

The unmistakable trend in industrial educational methods towards the definite special instruction appropriate to Trade Schools, which has been so noticeable a feature of the development of this instruction in this country during the past decade, is here indicated by the regret expressed by the Board at the lack in their schools of certain forms of definite industrial art work. The mere preception of such possibilities shows how great has been the development of these schools of the Maryland Institute and how, with each step of the

* "Maryland Institute for the Promotion of the Mechanic Arts, Baltimore, 41st Annual Report, etc. 1889. Pp. xix. 28."

ascent, the prospect of possible usefulness broadens before the earnest managers.

The proposal to substitute a "committee on a Museum of Art and Design" for that on "Lectures" is also a sure sign of progress in the same direction.

FORTY-FIRST ANNUAL REPORT OF BOARD OF MANAGERS, 1888-1889.

BALTIMORE, *April 17, 1889.*

To the Members of the Maryland Institute:

Your Board of Managers, in making their Forty-first Annual Report, desire to congratulate you on this the most prosperous and efficient year of the existence of the Maryland Institute. The Board has wisely confined its work to the same departments as for some years past, which experience has shown to be the proper sphere of its successful endeavor. To the Principal and his Assistants grateful thanks are due for their enthusiastic and faithful service, to which our success is mainly due. The Actuary this year, as for the years ever since his appointment, has more than performed his duties, and has been one of the most efficient factors in our progress.

Many new models, sketches, frames and furniture have been added to our equipment, and your school now stands, so far as its teachers and equipment are concerned, easily in advance of any school in the United States doing the same work. Your Board, of course, regrets that the means at its command do not permit the addition of many forms of art work which would be most desirable, as for instance, portraiture, carving, carpet designing, a fuller course of china painting and burning, and a greater development of all forms of instruction in designing for all kinds of manufactured goods. All of the instruction in the School is, however, thorough; all the work is honest pupils' work; and within our range compares most favorably with that of the best schools in the country. The City and State aid us, and we think we show better results for the money expended than does any other institution of an educational character in the City or State.

STATISTICS OF ATTENDANCE.

The Night School opened on the 15th of October, 1888, and continued until March 15th, 1889. The number of students was 486, being 5 in excess of 1888. The several divisions were composed as follows:

Free-hand Division.....	151
Mechanical.....	196
Architectural.....	132
Post Graduates.....	7
	<hr/>
	486
	<hr/>

The number of graduates will be in—

Free-hand Division.....	7
Mechanical.....	21
Architectural.....	10
	<hr/>
	38

It was not expected that the work of the present year would surpass the excellent work of previous years, yet it is found that it shows greater strength and a clearer conception of intricate detail. This is to be attributed to the enlarged experience and conscientious efforts of the faculty, supplemented by the efficient studies and models recently added to the outfit of the School

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The Day School opened on the 1st of October, 1888, and will close on May 28th, 1889.

The number of students is as follows :

Regular students.....	50
Special students.....	86
Saturday students.....	92
Post Graduates.....	3

231

This number is eight less than the attendance on the Day School the previous year, but the Night School having an excess of five, leaves the total number of students in both schools but three less than in 1887-88.

No diminution of industry and zeal on the part of the students is apparent, and the misgivings entertained as to the effect of the change, necessitated by circumstances, among the assistant teachers have been happily dissipated. The work is fully up to the high standard maintained for years by this department.

The number of graduates in the Day School will be eight.

The plan recently inaugurated of conferring Class Medals in the Day School and a Medal of Honor to the graduate of highest merit in the four years' course having resulted favorably, it will be continued.

* * * * *

The Board of Managers has voted to recommend the increase of the Committee on Schools of Art and Design from seven to twelve members, also to abolish the Committee on Lectures and substitute therefor a Committee on Museum of Art and Design. These propositions will be submitted to you for your action.

The Commercial Department, under Mr. T. W. Jamison as Principal, was opened on October 1, 1888, and continued until April 1, 1889. The number of students enrolled in this department is forty-nine. There will be four graduates.

The Library now contains 20,929 volumes, of which number 178 were added during the year. Among this latter number are several valuable art and scientific works, of which it is hoped greater additions can be made during the coming year.

* * * * *

In the Day School screens were provided for the time sketch room and also additional ones in the main hall.

In the Night School additional tables were furnished in the Mechanical class rooms, and extensive changes made in the lighting of these and the Free-hand class room. In addition new alcoves were placed in the Free-hand room instead of the inefficient ones formerly in use. The propriety of these changes and additions has been verified by experience in their use, and notwithstanding large additions in the number of lights, there has been no material increase in their cost, owing to changes in service attachments. Accessories for the use of the School have been added as follows ; by purchase a sectional model of the Worthington Duplex Pump, and a number of architectural models, and by donations the following : collection of silk plush, Mr. Wm. H. Perkins ; architectural models, Messrs. Joseph Thomas & Son and William Ferguson, and model engine (loan), by B. & O. R. R. Co., through Mr. Wm. M. Clements, manager. Mr. Charles J. Bonaparte has generously continued his annual subscription of \$100, Mr. Ernest Hoen his annual contribution of the handsome lithographic invitations to the Commencement, and Messrs. James Pentland, Ernest Hoen and M. A. Newell loans of plants used at the Exhibition.

In addition to the bequest of the late A. S. Abell, which has been set apart by the Board, and known as "The Abell Endowment Fund," the Board is in receipt of a bequest of \$1,000 by the late William Knabe. This latter bequest has been paid over by the executors, Messrs. Ernest Knabe and Charles Keidel, without the usual formal delay ; the Board has ordered the amount to be invested and known as "The William Knabe Fund."

By resolution of the Board of Managers all bequests or donations amounting to \$1,000 or more will be set apart and known by the name of the donor.

* * * * *

The Board presents the following exhibit of receipts and expenses for the fiscal year ending August 31, 1889:

RECEIPTS.

Regular receipts from September 1, 1888, to March 31, 1889	\$5,490 50
City appropriation	6,000 00
State appropriation	6,000 00
	<hr/>
	\$17,490 50

EXPENSES.

From September 1, 1888, to March 31, 1889	\$12,297 39
Estimated expenses to August 31, 1889	5,689 85
	<hr/>
	17,987 24
Estimated deficit	\$496 74

JOS. M. CUSHING, *President.*

In Professor Fuchs report the progressive development of the schools is shown by comparison with the past as well as by their present activities—speaking of the Day and Night Schools, he says:

That they have grown from their early primitive condition to an advanced state of development, efficiency and largely increased number of graduates, is clearly apparent when we compare the present with years gone by, when the day schools were insignificant, and the pupils attending the night schools, had to climb up into the lofts with hardly any facilities for study save copying drawings, lithographic prints, &c., the main part of the building being devoted to other purposes. To-day the day schools occupy the great commodious hall, provided with every comfort and convenience, and the night classes, furnished with accommodations and facilities for study that are not surpassed if even equaled in this country. When the classes were reorganized six years ago, there were in the day school, fourteen regular students above the elementary grade, and at the first exhibition there were neither oil paintings, modeling work nor designs of any description. In the year following, the hall was refitted with screens and other conveniences, and the oil and modeling classes started; at the second exhibition was shown a modest display of painting and modeling work, with thirty-three regular students in the advanced classes, the charcoal and water color work also steadily improving; at the end of the fourth year we had the first complete exhibition of artistic work of all the classes, from the elementary to the graduating. The standard of marking has also been raised, and a comparison of the work of the last two years shows a marked improvement over those preceding.

Many of our graduates are employed in this and other cities and states as teachers in schools and seminaries, some have established private art schools, others are engaged as draftsmen and designers, while others went to Europe to continue their art or technical studies in France and Germany.

INTEREST SHOWN BY THE STUDENTS.

The interest and zeal with which the students have worked early and late throughout the year is deserving of the highest praise. The studies from life in charcoal, oil and clay, have been extended this year over any previous one with very gratifying results. The Post Graduate class and several special students have made a very creditable start in life studies of heads and figures in oil, under the

efficient instruction of Miss Marie Keller, our teacher in oil painting. The life studies of heads and figures in charcoal and clay by the graduating class reflect credit upon both students and teachers ; all these studies being limited to from four to twelve hours, we do not expect a high degree of technique or finish, the chief aim being to cultivate the feeling for form and rendering of texture as a sound basis for future study. The modeling class has also added a number of excellent examples of modern ornament in plaster to our collection of casts, these are very useful as studies in drawing and shading in the lower classes.

All the day classes have been well attended and the work in charcoal, water color and oil, as you may see by the exhibit in the hall of the Institute, compares very favorably with that of last year.

In the night classes the attendance has been large and regular, the interest, industry and progress of the pupils all that could be desired ; on the stormiest night in winter there were few absentees. The mechanical division has been particularly strong this year. In all my experience I have never seen so much accomplished in any school, and as to the quality in point of accuracy and finish, a large proportion of it will pass anywhere for professional draftsman's work. That this class is preëminently so efficient is chiefly due to the fact that it is so well equipped with excellent models of machinery, by the aid of which the pupils are not only enabled to study drawing practically, but also the construction, movements and adjustments of all the parts, and this it is that makes the subject so interesting that many are not satisfied to do the amount of work that is required of them, but fully twice as much, devoting all their evenings at home as well as many days to the completion of an entire set of working drawings of the engine, machine or building.

EMPLOYMENT READILY OBTAINED BY GRADUATES.

Many of our Night School graduates are doing well as draftsmen, foremen or high grade artisans in this city and elsewhere. Three of this present graduating class are already absent this evening—one having received a position in Richmond, Va., another in Augusta, Ga., the third has gone to New York.

The new models acquired for the architectural classes last summer have likewise been of great service in explaining the construction of the various parts of buildings. The studios and lighting in the free-hand room are greatly improved by the alterations made last summer. It is most gratifying to see that whilst the requirements in regard to the amount and character of work in all the several departments of the Institute have been greatly augmented, the number of graduates is steadily increasing, the number this year being greater than ever before in the history of the Institute, which is certainly most satisfactory evidence of well-directed zeal and earnestness of purpose on the part of students, as it also in no less degree reflects credit upon the thorough instruction and efficiency of the Maryland Institute Schools of Art and Design.

The Report by the Managers for the school year 1889-'90, gives a most encouraging statement showing the continued prosperity and growth of the Institute Schools.

FORTY-SECOND ANNUAL REPORT OF THE BOARD OF MANAGERS.

BALTIMORE, *April 16, 1890.*

To the Members of the Maryland Institute :

Your Board of Managers is most pleased, on this occasion of its 42d Annual Report, to be able to state that this past year has, in the number of pupils, and in the general character of work, and in the increase of its facilities for development, far surpassed any previous year. The Board congratulates you on having retained the

Principal of the schools to whom, and to his assistants your most grateful thanks are due, for their most efficient and devoted service, without which, and the enthusiastic energy with which it was rendered, such success would have been impossible.

Your energetic and systematic Actuary has, during this year as in former years, kept all the affairs of the Institute in most exact order, and greatly aided in securing the prosperity which has blessed the Institute.

Much of needed equipment has been added during the year, but means have not sufficed for opening new courses of instruction.

In every department of the schools the work has been honest, thorough and excellent, comparing most favorably with any schools with similar curriculum in the United States. The Board expended a considerable sum of money and made a most satisfactory exhibit of the work of the schools at the Maryland Agricultural Exposition and Fair, but the continued rain that prevailed much reduced its value as a factor in public education.

The City and State have aided us, and have both found the schools trustworthy stewards and disbursers of the public funds.

STATISTICS OF ATTENDANCE.

The Night School opened on 14th of October, 1889, and continued until March 14th, 1890. The number of students was 538, being 52 in excess of the number for 1889. The several divisions were as follows :

Free-hand Division	164
Mechanical "	202
Architectural "	164
Post Graduates	8
	<hr/> 538

The probable number of graduates will be

Free-hand	4
Mechanical	26
Architectural	18
	<hr/> 48

The Day School opened October 1st, 1889, and will close May 24th, 1890.

The number of students is 226, divided as follows :

Regular Students	48
Special Students	75
Saturday Students	98
Post Graduates	5
	<hr/> 226

This number is five less than in 1888-9, but the Night School having an excess of 52, leaves the total number of pupils in both schools 47 in excess of 1888-9. The total number for 1889-90 is 764. The work of the Day School has been characterized by industry, zeal and good attendance, and the results promise to be fully up to, if not beyond, those of former years.

The number of graduates will probably be 6.

"The Annual Commencement will be held at Holliday Street Theatre, on Tuesday, June 3d, on which occasion the Hon. R. C. Davidson, Mayor of Baltimore, will be the orator.

The Annual Exhibition of the work of the students for the year will be at the Institute, on Wednesday, Thursday and Friday, June 4th, 5th, and 6th.

By direction of the members of the Institute according to resolutions passed at the last annual meeting, the committee on Schools of Art and Design has been in-

creased from seven to twelve members; the committee on Lectures has been abolished, and a committee of seven members, entitled the committee on Museum of Art and Design, has been constituted.

The Commercial Department under Mr. T. W. Jamison, opened October 1st, 1889, and closed April 3, 1890. The number of students enrolled being 50, one more than in the previous year. There will be 4 graduates.

The Library now contains 21,067 volumes, of which number 139 were added during the year. The use of the Library by the students is gratifying and useful.

The building has received only necessary repairs, with the addition of improvements in means of exit in case of fire.

The receipts for the present year will amount to \$18,721.50, and the estimated expenses to \$18,255.38, allowing some little amount for such urgent repairs and improvements as may be needed.

JOSEPH M. CUSHING, *President.*"

The report by the Principal of the schools, Professor Fuchs, notes several changes in the corps of instructors and gives excellent reasons why a library of art books illustrating decoration and design, and a collection of Art objects showing the successful application of art to industries, ought to be at the service of the teachers and pupils of the Institute. A small beginning in the way of books and objects has indeed already been made; but collections of carefully selected books and objects made on a definite plan and added to as opportunity arises, are greatly to be desired.

"REPORT BY PROFESSOR FUCHS.

BALTIMORE, June 3, 1890.

To the Committee on Schools of Art and Design, Maryland Institute:

Gentlemen—In submitting to you my Seventh Annual report upon the progress of the schools of the Institute, permit me to state briefly, that the courses of instruction in the regular and special Day School classes, as well as in the several divisions of the Night School, were conducted substantially the same as last year.

The Day School opened October 1st, and closed May 25th; the number of students attending the same was within a few of what it was last year. The attendance has been regular, and the work in all departments prosecuted with uninterrupted diligence and enthusiasm by the students as well as their instructors.

Certain changes in the faculty became necessary by reason of the resignation of Mr. W. S. Robinson, who for three years held the position of head assistant, and taught water color painting, drawing the head from life and modeling in clay.

It is unusual to find one person thoroughly competent to teach these three branches of art, and it was therefore deemed expedient to divide this work among two, or if necessary three special teachers. In search of these, I proceeded during my summer vacation, to Philadelphia, New York and Boston, but after numerous enquiries, and inspecting specimens of work of a number of applicants, I found we could do quite as well, if not better, by engaging several of our own graduates to supply Mr. Robinson's place, each taking that branch in which he had developed special strength and ability.

Accordingly, Mr. H. D. A. Henning was appointed to take charge of the modeling class, assisted by Mr. R. R. Latimer who also taught drawing of the head from life in Class D, and Mr. Albert Horstmeier was placed in charge of Class B, his speciality there being water color painting and perspective.

I can state with great pleasure and satisfaction, that these gentlemen have

acquitted themselves most creditably in their several stations, and soon gained the confidence of their pupils, as well as the approbation of the Principal.

The charcoal still-life studies in Class A, under the direction of Miss Annie C. Volck, are also deserving of special mention for the intelligent and faithful rendering of light and shade and color values, as well as texture of materials.

ATTENDANCE OF SPECIAL STUDENTS.

It is also gratifying to note that an unusual number of special students have attended the school with as much regularity as the regulars, and have worked with great enthusiasm in the same line; ordinarily this class of students, being more or less transient, and not pursuing their studies with the same degree of earnestness as the regulars, are not expected to accomplish as much. A number of them leave before the term closes, and take their drawings home with them, thus leaving the amount of work exhibited, as a rule, by special students, rather small as compared to that of the regulars. Still, there is no question that the influence of those who have, though it be only to a limited extent, and merely as an accomplishment, imbibed true art principles, is carried to every home whence these students come, and as year after year, new students come and go, this elevating influence of cultivated taste is spread more and more throughout the community, and manifests itself in the desire of people to surround themselves, according to their means, by objects which the artist's skillful hand has made beautiful, and which tend to make home attractive and enjoyable. The desire of the one to possess, encourages the other to produce, and thus the artist's talent and the artisan's skill are called into action to supply the demands of appreciative buyers.

DIRECT INFLUENCE OF ART STUDY UPON THE STUDENT.

The practice of drawing, painting and modeling teaches students to be more observing of their surroundings, discriminating in regard to good form, color and design. Children, especially girls, take a leading part in almost every family in determining the adornments of the walls, mantels and cabinets of their homes, and though the pictures, furniture and ornaments of people of limited means may be inexpensive, yet if selected by one whose taste is sufficiently cultivated to discriminate between the coarse and flashy that offends the eye, and the refined and chaste which charms the soul, is it not fair to assume that more genuine and lasting enjoyment is bought for less money than if left to one who has no taste or judgment in such matters?

The course of Art instruction at the Maryland Institute is sufficiently elastic to meet the desires and aims of those who wish to study art to a limited extent as an accomplishment, as well as those who intend to master more fully the fundamental principles, and expect later to become artists, art teachers or designers. We have among our list of special students quite a number who have developed into clever artists, while our graduates hold high rank as teachers and artists as well. Wherever they have been called as teachers in private or public schools they have been eminently successful; of course, positions to teach are not always readily obtained, and much depends upon the personal efforts of individuals to find a field of labor. The drawing classes of some of the best private schools in this city are presided over by graduates from the Institute; three were appointed during this year as special teachers of drawing in our Public Schools; one went to a prominent Pennsylvania college; one to a seminary also in Pennsylvania; another to the Normal University in Indiana and two are in California. The reputation of the Institute is spreading over the Southern States. On our lists appear names from the Virginias and Carolinas, Georgia and Tennessee; also from Pennsylvania, New York and Minnesota.

NEED OF BOOKS, MODELS, AND ART DESIGNS FOR THE DAY ART SCHOOL.

We have added many valuable studies and models to our stock of school properties during the last few years, some by purchase, some by gifts from generous friends of the Institute, but in order to keep abreast of the times and enlarge our field of instruction we need an Art Library, especially books of reference on industrial art, and on decorative art and design; without this necessary adjunct we are restricted to a narrow sphere. We should also have a more extensive collection of specimens of designs, especially of ceramics, textiles and general decorative art; these are as necessary to the art student as sunshine and rain are to the flowers of the field. If our students had opportunities to study such things at their leisure in our own museum, they might often be helpful to our manufacturers by furnishing them with designs, as is the case in other cities. We can and do teach them to draw, paint and model certain things, but we cannot teach them practical designing unless we can place in their hands good examples to study. There are many excellent things exhibited in store windows along our business streets, but if a young lady, and most of our Day School students are of that sex, should take out her sketch book to make sketches of a vase, a piece of silver-ware or carpet pattern in front of a store window, she would at once become an object of curiosity; she is afraid to step inside, and ask the privilege of making it there, for fear the dealer might refuse or suspect her of wanting to steal the pattern. This is not imagination, but based upon actual experience. A few hundred dollars applied every year in the purchase of books and such objects as would be most useful as desirable patterns to study, would benefit and promote the efficiency of the Day School in the same measure as the models of machinery and building construction have done in the Night School.

VALUE TO THE STUDENTS OF THE MODELS OF MACHINERY AND ARCHITECTURE PROVIDED FOR THE NIGHT SCHOOL.

These I can say with confidence are second to none in this country for the very reason that there we have these things better than can be found in any other similar institution. The result is, that this large number of young men whom you see sitting before you on this platform, and who are here to receive their diploma of graduation as mechanical and architectural draftsmen, have learned the art of drawing practically and thoroughly, as you may see by their numerous sets of drawings, of engines and buildings now on exhibition at the Institute, and what you see there are not selected specimens, but comprise the entire work of every graduate made this year. It is not an empty compliment but a justly earned tribute when I voice the comment, passed by the gentlemen who acted as prize judges, "That it is a matter of surprise that so much, and such uniformly good work can be produced in a school in so short a time." Ask the reason why this is so? Is it because our boys are more talented than the boys of other cities? No, it is because we have an efficient corps of thoroughly competent teachers, a system of instruction and superior facilities for study, which thoroughly arouses the ambition, and stimulates the interest of our pupils in their work. It is not often that pupils do more work than is required of them by the rules of the school, but at least half of our graduates have done considerably more, some nearly twice as much as they are asked to do. It is needless to add, having done this, they have learned so much more.

EMPLOYMENT OF GRADUATES.

The reward is not wanting, During this last year a number of our young men have found positions as draftsmen in engineers, and other offices or manufacturing; among these are three or four in this city, one in a Government Bu-

reau in Washington, two in New York City, and one at Edison's electrical works in Schenectady, New York. Many of our former graduates are scattered all over the country, engaged in responsible and remunerative positions in almost every technical occupation. It is not the training of skillful draftsmen alone, however, to which our aims and efforts are directed, for the number who attain that degree of excellence in drawing required of a professional draftsman, is comparatively small, but it is to give invaluable instruction to large numbers of apprentices and artisans engaged in any and every sort of industrial occupation, thereby making them more intelligent, more accurate and more skillful workmen. That this effort is appreciated is shown by the constantly increasing number of pupils, and the earnestness with which all who come there attend to their work. The number of graduates is likewise increasing every year as the following extract from the records shows: In 1860 the number of graduates were nine, in '65 seven, in '70 eight, in '75 fourteen, in '80 eleven, in '85 twenty-one, in '90, which is the present, there are forty-two.

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Respectfully submitted,

OTTO FUCHS, *Principal.*"

The Annual address, delivered on this occasion by the Mayor of the City, followed the reading of his report by Professor Fuchs.

Mayor Davidson's address is here given in full.

"ADDRESS BY HON. ROBERT C. DAVIDSON.

Permit me, Mr. President and ladies and gentlemen, to express the gratification afforded me by the flattering nature of your invitation to be present on so interesting an occasion.

I should fail in the expression of my real sentiments if I should omit to emphasize the high estimate which I entertain of the value of the Maryland Institute and its Schools of Art and Design to the people of this city.

The intense interest which is awakened by such occasions as this, the manifest desire of our citizens to keep in touch with the beneficent aims of such an institution, the generous contribution of active and intelligent effort which has, in time past, as now it does, distinguished the estimable officers of the Institute, whose perseverance and patient, faithful energy have made such lasting impress upon the future happiness and well being of so large a number of our youth, are all encouraging, and healthy indications of the appreciation of the public. Who shall acquaint this community with the facts as to the beneficial results of the training which has here been given to the thousands of deserving youth of both sexes, who have sat at the footstool of industry and intelligence? Who shall measure the length and breadth of the stream of human happiness which has flowed from this source? Who shall sum up the contentment, the peace, the joy, the comfort which have found rest and refreshment beneath the shadow of that tree of knowledge whose roots first found sustenance in the old institution whose anniversary we now celebrate?

TRIBUTE TO THE FOUNDERS OF THE INSTITUTE.

Sixty-four years have passed since the warm sympathy of Baltimoreans was awakened in the interest of a desire to combine their forces, and, in an humble, modest way, prepare an avenue through which the youth, and future hope of the city, might travel in the pursuit of knowledge and education in the material and practical solution of the problem of life. If it is said that the evil influences of a man's life do not die with him, it may be said with equal truth that the good which

men do is far reaching in its influence, and its simple purity, and nobleness of purpose, extends its scope through all the revolving years, and with a power to which no limits can be assigned, a fragrance which is enhanced by time, the good which men do clings to their memory, keeping it green while time shall last. Therefore, we honor those noble benefactors, who, in its infancy, fostered and encouraged this Institute. Their confidence, and human kindness stretched beyond themselves into a future which held promise of benefit and encouragement to those who might come after them. Like he, who, burying the acorn—looking forward to future ages, plants the oak for posterity—cannot expect to sit beneath its spreading branches, and enjoy its shelter, but he rejoices in the idea that the seed he has planted will grow up into a lofty tree, to shelter beneath its kindly branches, in youth and old age, generations yet unborn, long after he shall have ceased to tread his paternal fields.

Few institutions, anywhere, result in more substantial benefits than yours, and there is just room for thankfulness in contemplation of the material benefit and happiness which have been reaped by thousands of this city, as the results of the public spirit and forethought of its founders.

VALUE OF BOTH THEORETICAL AND PRACTICAL KNOWLEDGE.

Knowledge is power, the power which challenges admiration, and bestows upon its possessor dignity and force of character. In its comprehensive scope, in its power and security, rests the hope and future of the citizen, as well as of the state and nation. In the practical methods of training, which are parts of your system of instruction, the unwisdom of a purely ornamental education is quite fairly demonstrated. Any ordinary mind may appreciate the harmonious beauty of a well defined achievement in architecture, but the broadening of the intellect to the extent of grasping the plans of its construction, or to be able to formulate original designs and intelligently advance them, is quite another and more creditable undertaking. To stand before and admire a splendid painting, and feel the inspiration of the thoughts of the master which have stamped themselves upon the canvas, under the guidance of his practiced eye, and skillful hand, is one thing, but it is quite another thing to have your own modest conception of the beauties of nature materialize and with subtle discrimination, and exquisite combination of color, produce a work of art whose blending tints, and harmonious truthfulness are their own mute appeal for admiration.

A man of education and practical knowledge walks with certainty and boldness through the material world, ascending heights which ignorance finds inaccessible, utilizing forces and overcoming obstacles, which well nigh obliterate the aspirations of the unlearned—he may by the exercise of will, harness up the mighty force of steam, and send the locomotive whirling across a continent; he chains the electrical current to the earth, and commands it to do his bidding in carrying his thoughts even across the sea; he reads in nature the story of confirmation of revealed truths; he hears the murmurs of the sea, and is enraptured with the marvellous symphonies of the sky by the rhythmic movement of whose planets he may foretell with accurate precision the appearance of the comet of a thousand years hence, as of the one which shall excite wonder in its sweep across the firmament at an earlier period. It is certainly cause for profound gratitude that here, in our community, is established an institution the influence of which tends directly in the line of orderly and practical cultivation in useful and graceful accomplishments, which are alike valuable to the scholar and creditable to the spirit of enterprise by which, having been quickened into life, they are nurtured and developed into large and comprehensive spheres of usefulness.

Education is the symmetrical unfolding and ripened fullness of *all* the powers and inherent capabilities of the human mind. With the awakening and quickening of the mental germ, the inherent power to attract congenial substance is developed and

augmented, and, as we supply food for the body, so must the mental and moral strength be developed by its appropriate nutrition in order to bring out the hidden powers, and enable man to measure up to the fullest extent in the development of character and capacity, the two grand pillars of the arch which spans the royal avenue to success.

It is therefore, a happy thing that our government—and the people whose character is, under our free institutions, inevitably impressed upon the government, should freely, and liberally provide the seed of educational advantages from which the golden harvest of intelligence and patriotism will follow with profitable and gratifying increase, quickening and enlarging the mind, elevating all toil, imparting pleasure with a fuller comprehension of the responsibilities and seriousness of life, and, sweeping, with a more refined and delicate touch, the harpstrings of human feeling, and producing harmony out of what would else be the discordant elements of ignorance and vice.

THE PURPOSE OF THE INSTITUTE.

The object for which the Maryland Institute exists is shortly and succinctly expressed, as though by one who accurately knew the use of language; it is "For the promotion of the Mechanic Arts." The need of our times is for the skilled mechanic, to whom, under almost all circumstances, a competent salary is accessible, and who always enjoys an immense advantage over the mere hewer of wood and drawer of water when reduction of force becomes an imperative necessity in the vicissitudes of business life, and still more over the worthless drone. It is eminently proper that women as well as men should find here that preparation which will better fit them for the conflict of life. The practical education of women should be given the widest scope in the direction of affording her ample opportunities of self support in the event of misfortune or financial disaster. Thousands of cases have occurred where those previously accustomed to luxury and abundance, have been suddenly stripped of all by the hand of fortune; in such a moment, with the very best training, the condition of woman is embarrassing and deserving of sympathy, but it can be alleviated and rendered more tolerable precisely in proportion to a previous development of business habits and practical industry. In the possession of practical knowledge no condition, however humiliating, is quite desperate, and if it is true that only those shall prosper who are willing to toil, it may be equally true that a willingness, devoid of capacity and experience, is sadly at a disadvantage in time of reverses, from which none is exempt, and to which the affluent are perhaps most exposed.

A WORTHY CUSTOM OF THE ANCIENT HEBREWS.

The ancient Hebrews had a custom, truly worthy of imitation, in that to the most finished education was added the practical knowledge of some trade, so that the great and noble might have a resource, if deprived of their possessions, which would prevent their becoming helpless; and it was this practice which gave the noble apostle to the Gentiles, high born, and magnificently educated, as he was, the glory of proclaiming the Gospel while, as he says, he "with his own hands ministered to his necessities." Every where Sacred Writ refers to the work of the hand, rather than of the brain, and so, Mr. President, your efforts and those of your worthy co-laborers in a most important field, are yielding results which affect present and future generations, in impressing upon our rapidly growing population a sensible appreciation of the value of practical education; of the importance of cultivating habits of industry; and in the effort to enrich their own lives by an enlivened apprehension of the artistic and natural beauties by which they are surrounded.

In every period of life the acquirement of knowledge is a fruitful source of pleasure to the mind, but in the freshness and ardor of youth a combination of circumstances make it productive of highest enjoyment. It is then that everything has

the charm of novelty, and the spirit of inquiry is voracious in its demands, and the bounding heart is stirred afresh with bright anticipations of future happiness, and it is an ornament, as well as an honor to our city, to have the means of supplying whatever may contribute to the well being of our people, and add to the purity and innocence of our domestic life.

In the future life of these students they shall behold themselves freed from the grasp of ignorance and raised above the degrading influences of incapacity, and they shall see in the productions of the magic powers of the human mind the fruits of their own industry, their joys heightened, their sorrows alleviated by the proud consciousness that they eat neither the bread of idleness or fraud, and in the rational enjoyment of the bounties of the Creator, chastened by religious precepts and elevated by the refinements of art and science; they shall, from beneath the cooling shadow of their own vine and fig tree rise up to call this Institute blessed, being animated by a spirit of thankfulness for the immeasurable blessings of rational existence in which are involved the immortal hopes of a Christian community and the glorious light of everlasting truth.

It is most appropriate that so many of the fair ladies of this beauty-famed city should grace your celebration by their presence, and that flowers should deck the place of your assembling, since your Institution was among the pioneers in the noble discovery that in the search for truth, and knowledge, that in the cunning of the hand, in the skill of the eye, the mother and the sister were the equals of the father and the son, and that a gentle touch as well as a rough one could open the gateways of knowledge.

The record of the school year 1890-'91, as given in the managers report* shows the increasing prosperity of the Institute, with increasing activities in every direction. Additional rooms for the night school having been opened to meet the growing attendance; the beginning of an Art Museum by the loan from the Peabody Institute of valuable casts of antique sculpture, formerly deposited in the galleries of the Maryland Historical Society is recorded; while the small collection of objects of industrial art, has been increased by the purchase of a few examples of Ceramic Art and of metal work, and by a few gifts of examples of design for wall papers, etc.; the large working models of engines, machines, etc., and of buildings, which form so notable a feature of the facilities provided by the Institute for students in mechanical and architectural drawing, receive each year the addition of one or two new models—this is an instance in which the utility of object teaching emphatically commends itself.

The readiness of the managers and instructors of the Maryland Institute to inform themselves by personal observation, as to the methods and appliances in use in other cities for such instruction as they seek to provide, which has been a marked characteristic of the management of the Institute during recent years, and to which doubtless its steady improvement and growth is largely due, was abundantly illustrated during this season: as two journeys, one to the East and the other to the West, were made by a visiting com-

*Maryland Institute for the Promotion of the Mechanic Arts, Baltimore 43d Annual Report, etc., 1891. Pp. 72.

mittee of the Managers. Their report, printed in the pamphlet containing the 43d Annual Report, is here given in full; as it records the impression made upon well informed visitors by several of the schools which are described in the present volume of this Report and is, for that reason, of interest.

This policy of the Institute was still further illustrated by the sending of Professor Fuchs, across the Atlantic upon a tour of observation of European Art and Technical schools during the summer of 1891. His report upon these schools which will probably be given to the public in the 44th Annual Report of the Institute, will be looked for with interest.

The handsome pamphlet which contains the annual reports, the report of the visiting and the Museum committees, the address by Hon. John Prentiss Poe, and the programmes of the several schools for the year 1891-'92, the list of graduates, and the list of Officers and Instructors for the coming year, is in itself an effective object lesson; since it is illustrated with engravings of the several classes of drawing taught in the schools, being reproductions of drawings made by the pupils in the Day and Night Schools.

While the year therein recorded is declared by the managers to have been the most successful in its history; the summer of 1891 will also be memorable in the annals of the Institute by reason of the decease of three of its members long associated with its activities; one of whom, the last surviving Founder, Hon. John H. B. Latrobe, was so eloquently referred to by Mr. Poe in his address at the last commencement of the school. This distinguished citizen of Maryland, who had long survived his associate founders of the Institute, died on the eleventh of September 1891 in his 89th year.

The death of Col. James H. Bond, an Ex President of the Institute, and for many years an active member of the Board of Managers, occurred on the eleventh of August in the 66th year of his age; while in the death of Mr. Samuel Sands, at the age of ninety-one, was severed another link in the history of the Institute.

In many other lines of activity each of these public spirited citizens served well the community in which they lived honored and honorable lives, while in their efforts for the development of the educational facilities of the Institute, they clearly manifested that love for their fellow men which shows itself in the effort to give to all, the best available opportunity for self improvement. It is to be hoped that the example they have already set to their fellow citizens may be emulated by many generous souls. Of these three it may truthfully be affirmed that during their earthly lives, they served well the cause of Humanity. The following official notice of their decease was taken by their associates in the Institute:

MARYLAND INSTITUTE.

At the regular monthly meeting of the Board of Managers of the Maryland Institute, held Monday, September 14, 1891, the following tributes were made part of the record:

JOHN H. B. LATROBE.

Amid the general sadness of the whole community the Institute unites in mourning the death of its founder, John H. B. Latrobe.

In 1825 Mr. Latrobe inaugurated the enterprise of a Mechanics' Institute in Baltimore, and after its destruction by fire he was foremost in the establishment of the present Institute in 1847.

Amid the exactions of a busy life, crowded with professional engagements and occupied with many official duties, both public and private, he always found time to lend a helping hand when the Institute needed counsel and assistance.

The foremost citizen in our midst, his many and great services in behalf of our city and State entitle his memory to the lasting gratitude of all, but by none is a heavier burden of obligation borne than by the Maryland Institute for the Promotion of the Mechanic Arts.

SAMUEL SANDS.

The Board places on record a tribute of respect to the memory of Samuel Sands, fourth president of the Institute, whose death at the advanced age of ninety-one removes a relic link between the present and the past.

He was active in the formation of the Institute in 1847, and eleven years later presided over its affairs for two terms with zeal and ability.

It is meet and proper that now, in the advancement and success of the Institute, the meed of praise and gratitude should be awarded to the founders who bore the burden and heat of the day.

"They builded better than they knew."

JAMES H. BOND.

The Board of Managers have heard with deep regret and profound sympathy the announcement of the death of their colleague and friend, Mr. James H. Bond, one of the oldest members of the board and one of the warmest supporters of the Maryland Institute.

He was president of the Institute in the years 1878, 1879, and 1880, and chairman of the committee on schools of art and design for six years.

In every scheme of progress he was among the foremost, both wise to plan and skillful to execute. He never wavered in his allegiance, but stood by the Institute and its friends through evil report and good report.

Every member of the board feels that his death is a personal loss. A warm and constant friend, an energetic and successful officer, a patriotic citizen, he rests from his labors, and his works remain to perpetuate his memory.

JOS. M. CUSHING, *President*.

JAMES YOUNG, *Secretary*.

FORTY-THIRD ANNUAL REPORT OF THE BOARD OF MANAGERS.

BALTIMORE, April 15, 1891.

To the Members of the Maryland Institute:

In this, the 43d Annual Report, your Board of Managers has the gratification to congratulate you upon the most successful year in the history of the Maryland In-

stitute. Large and valuable additions have been made to the equipment of both the Day and Night Schools; new rooms have been fitted up for the use of the pupils, and extensive and permanent improvements and repairs have been made to the building. The Commercial School has been comfortably provided for in quarters dedicated to its exclusive use; the number of pupils in the Day School, in the Night School, and in the Commercial School, has largely increased, and the total number of graduates will be largely in excess of the number for any previous year.

A committee of the Board, accompanied by the Principal of the Schools of Art and Design, visited the Art and Industrial Schools of Philadelphia, New York, Boston, St. Louis, Chicago, Columbus and Cincinnati, and was able to make the most satisfactory report that the Maryland Institute Schools of Art and Design, within the limit of the work they undertake, stand easily ahead of all those in the cities visited, both as to fullness of instruction, accuracy of work, and convenience of school rooms and useful equipments.

The new committee on Museum of Art and Design has made a modest but valuable beginning, and bids fair, in the future, to prove of great service in our various schools.

The Board has been much encouraged during the past year by evidences of increased popular knowledge of and interest in its work, and by visits to the schools and addresses to the pupils by eminent citizens and ecclesiastics. The Board believes that the Institute has become one of the institutions of Baltimore of which its citizens feel proud.

The State of Maryland continues its aid to the Institute, affixing a very desirable condition that each county and each legislative district of Baltimore city should have the right, through their School Boards, to appoint a free pupil annually. This provision has brought some efficient pupils to our schools.

It is both the duty and pleasure of your Board to again express the obligations of the Institute for the invaluable services of the Principal of the school, the Actuary, and their faithful and earnest assistants.

To the Mayor and City Council, the thanks of the Institute are due for their warm and continuous fostering care.

The Board regrets that the year ending August 31, 1891, will show a deficiency of about \$1500, but as the expenses were necessary to the development of the schools and the proper accommodation of the pupils, and as most of the extraordinary expenses will not recur during the following year, the Board does not doubt but that by economy the receipts and expenditures of the coming year will balance each other.

STATISTICS OF ATTENDANCE.

The Day Schools opened October 1, 1890, and will close May 24, 1891. The number of pupils is 233, being 7 in excess of last year, divided as follows :

Regular Students	53
Special Students	62
Saturday Students	109
Post-graduates and Life.	9
	<hr/> 233

There will be three graduates.

The instructors in the Day School are :

Principal—Prof. Otto Fuchs.

Teacher of Oil Painting—Miss Marie Keller.

Teacher of Water Color Painting—A. Horstmeier.

Teacher of Modeling—H. D. A. Henning.

Teachers of Charcoal Drawing—Miss Annie C. Volck, R. R. Latimer.

Teachers of Drawing—Miss Elizabeth B. Murray, Miss Sallie Hayes,

The Night School opened October 13, 1890, and closed March 13, 1891. The number of pupils was 619, being 81 in excess of the number for 1889-90. The several divisions were as follows :

Free-hand Division.....	192
Mechanical Division	278
Architectural Division.....	144
Post-graduates.....	5
	<hr/> 619

There will probably be sixty graduates.

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The Commerical School opened October 2, 1890, and closed April 2, 1891. The number of pupils was 67, being 17 in excess of the number for 1889-90.

There will be two graduates.

The instructors in the Commercial Department for 1890-91 were :

THOMAS W. JAMISON.....	Principal.
SAMUEL M. WEAVER.....	Assistant.

Thus, during the year 1890-91, the number of pupils in all the schools of the Institute was 919, divided as follows :

Day School of Art and Design.....	233
Night School of Art and Design	619
Commercial School	67

Being an excess over the total for 1880-90 of 105.

Your Board is happy to be able to report that the attendance, deportment and earnest work of the pupils in all the schools have been most satisfactory and the results of their work will reflect credit on themselves, their teachers and the Maryland Institute. The annual commencement will be held at Ford's Opera House on the evening of Tuesday, June 2d, at eight o'clock. Hon. John P. Poe will deliver an address on the Schools of Art and Design.

The annual exhibition of the work of the pupils will be at the Institute on Wednesday, Thursday and Friday, June 3d, 4th and 5th, from 10 A. M. until 10 P. M.

The Library now contains 21,141 volumes, of which number 74 have been added during the year. The students appear to derive great pleasure and benefit from this department of the Institute.

The receipts for the present year will amount to \$21,740.38, and the estimated expenses will amount to \$23,308.28, showing a probable deficit of \$1,567.90.

It becomes the sad duty of the Board to announce to the Institute the death of Mr. Alexander L. Spear, one of the oldest and most efficient members of the Board, who for a long period served as chairman of the Hall Committee. Genial in manner, upright in conduct, diligent in business, devoted to the interests of the Maryland Institute, his loss will long be felt by his associates in the Board and by the community of which he was a most useful and esteemed citizen.

The Board commends to your careful attention the able and useful reports of the Committee appointed to visit the Art and Industrial Schools of other cities and also the report of the Committee on Museum of Art and Design.

JOSEPH M. CUSHING, *President.*

REPORT OF A SPECIAL COMMITTEE APPOINTED TO VISIT SCHOOLS OF ART AND DESIGN IN OTHER CITIES.

BALTIMORE, *March 9, 1891.*

To the Board of Managers of the Maryland Institute.

GENTLEMEN: The committee appointed to visit schools of Art and Design in other cities, beg to report as the result of their observations in Boston, New York,

Brooklyn, Philadelphia, Cincinnati, Columbus, St. Louis and Chicago, as follows :

We find the same disposition, both East and West, to divide the field of labor into two distinctive branches, the Art schools and those of Industrial drawing. All the schools visited, to some extent, it is true, embrace both features ; but the Art schools, without exception, tend strongly towards advanced or High art, and the industrial feature is but nominally maintained, while the schools in industrial drawing extend no further in the artistic branches than the free-hand department in our own Night school.

THE MASSACHUSETTS NORMAL ART SCHOOL

in Boston, with the two leading City evening drawing schools taken together, bear the strongest resemblance to our own Day and Night schools.

Comparing the "Normal School" with our day school it may be said that it only excels us in the completeness of its equipment and the ambition of its pupils to prepare for a life work, to which may be added the influence of a certain "art atmosphere" prevailing in nearly all the cities visited, which it is the province of the Maryland Institute to encourage and promote in Baltimore.

Two features in the curriculum attracted our attention—a Normal department for the training of teachers for the less advanced classes, involving only two years instruction ; and the advanced instruction designed for portraiture by the life class in the use of the Male Torso, accompanied with lectures upon anatomy.

As to the reduced season of preparation in the Normal department, it would seem especially appropriate in our community if, by its adoption, we can hasten the general introduction of a thorough system of drawing in all our public schools.

Drawing teachers might very well vary in their qualifications, just as other teachers and the pupils themselves are graded in the primary, grammar and high schools. Said Mr. Charles C. Perkins, the great apostle of art education in this country: "Children may be taught to draw as easily as to write." And as they are taught to write from the very beginning of their instruction, so, even in the primary schools, the youngest pupils should be taught drawing.

It does not follow that the drawing teacher in these subordinate classes should be a skilled artist, an accomplished architect or a fine mechanical draughtsman. On the contrary, such instructors would be as much out of place, perhaps, as learned professors from universities in kindergarten classes. The standard of qualification for a drawing teacher in a primary school might involve but two years of preparation, while three years would be required for a grammar school, and four years, or even more, for the high schools or colleges.

Much of the preparation in the Normal department of the school at Boston is devoted to learning the art of teaching—a most important factor in the system, and so largely does this enter into the plan that a change is contemplated requiring each pupil to first undergo a year's instruction in Class A. In other words, to have had a thorough course in elementary drawing before entering the Normal class, so as to devote more time while in it to learning how to teach.

In advanced artistic training, especially as pertaining to portraiture and figure painting, we find more general and continued work among the pupils than obtains in our school. This may be due to the fact that the pupils of the Massachusetts Normal Art School, when graduated, have so many avenues open to immediate reward. They are engaged in preparation for a life work, and are sought for, from far and near, as teachers throughout the country.

We have sought to impress this view upon our own regular students by the establishment of the Post-graduate course, which also includes the Normal feature, and we would urge upon our advanced pupils, especially of the Post-graduate class, the importance of the study of the human figure as an essential element in art education.

MUSEUMS WITH ART SCHOOLS ATTACHED.

The Museum of Fine Arts in Boston, the Metropolitan Museum of Art and National Academy of Design in New York, the Pennsylvania Academy of Fine Arts in Philadelphia, the Cincinnati Museum, the St. Louis Museum of Fine Arts and the Art Institute of Chicago all have fine Art schools attached to them, and the excellent facilities afforded by the collections of paintings, statuary and art works, are of inestimable value to the students. With the exception of the Metropolitan however, very little attention is given to the mechanical or architectural classes in these schools, the artistic department engaging their attention.

VARIOUS METHODS OF ART INSTRUCTION CRITICISED.

In these schools we observed the application of a plan of advancing pupils into the Life class without, what we conceived, to be sufficient preparation in drawing or coloring.

The plan has sturdy supporters, however, upon the theory that art education and practice, like other professions and employments, is tending towards specialties, and that students who have selected or developed a taste for Portraiture or figure drawing should not be retarded by instruction in general drawing, or even by too much time spent in the cast class or modeling room, but should be directed as speedily as possible in their chosen specialty.

This may be the correct theory, but it did not recommend itself to our judgment by some of the examples of form and color we observed. Probably drawing too long from the statue or cast may cause the student to make this human figure stony and ghastly, but it would seem that until he has at least learned to portray the immovable statue well, he is hardly fitted to undertake the more difficult mobile figure, and that until he has thorough training in light, shade and color, he is illy fitted to master the delicate problems of flesh tints and facial expression.

The Museum plan involves a special course in drawing designed particularly for the life class. From outlines and shaded studies from geometrical solids, the course proceeds to blocked features and limbs, then heads, masks and busts, then the head from life, then the skeleton and anatomical figure, concluding with the nude model, sometimes preceded by and sometimes alternating with, the antique figure. Some oil and water-color painting, decorative design and modeling are also taught, but the general aim seems to be the life class, with such accessories only as are necessary for its accomplishment.

In one instance we found a novel method of rapid advancement. As soon as the pupil has learned the use of the pencil—two or three weeks' preparation only—he is set to work on the cast, blocked heads and features taking the place of geometrical solids, and by rapid strides he is introduced to the work upon the statue, and thence to the human figure. This plan is more rapid than any other of the modern methods, all of which, at least, involve some training in drawing from the plainer objects before attempting human heads and bodies. We could see nothing in the method or the results obtained to justify such a revolution in art education.

However much we may be disposed to criticise the rapid method of instruction in the museum schools, we cannot too highly estimate the value of the museums themselves. The wealth and varied assortment of art productions, always open to the inspection of the student, constitutes an effective means of education of themselves. By the recent addition of statues and casts kindly furnished us by the Peabody Institute, coupled with the few examples of Ceramic art lately acquired, we are able to present to our pupils a suggestion of the wonderful advantage of the museum as an educator. But they should be encouraged to visit the collection at the Peabody and to avail of every opportunity possible to view the magnificent collection of Mr. Walters, which, in point of excellence, is certainly not excelled, if even equaled, by any of those visited.

ART STUDENTS' LEAGUE OF NEW YORK.

This is a most excellent High School of art, and the pupils are students in fact as in name. In contracted, uncomfortable quarters, they work with an energy and zeal that betokens great enthusiasm. Some of the teachers are drawn from the colony of leading artists of New York, the method of instruction in the advanced classes being the French system of criticising the work rather than directing the efforts of the students by teaching. The school is a bee-hive of industry and the work accomplished is most gratifying.

SCHOOLS OF DESIGN.

The Lowell School of Design in Boston, and the School of Industrial Art, under the auspices of the Pennsylvania Museum in Philadelphia, are of this class. The first named is an excellent elementary school, the more advanced pupils only branching out into original designs. Much attention is given to the mixing of colors and the production of variations of patterns of mural or floor decorations.

The School of Industrial Art in Philadelphia has a broader foundation and reaches further in its results. More attention is paid to drawing, painting and modeling. Some wood carving is done, but the pride of the school is its weaving department. Here designing is not only taught but applied, and the results obtained in carpet, woolen and linen cloth weaving are highly creditable. There is also a department of chemistry and dyeing, which, for lack of time, we were unable to investigate. It is apprehended that the Drexel Institute, with its splendid endowment, may supersede this excellent institution, but it is to be hoped that if such be the case the new institution will embody the features of the present one, and accomplish as good results as are now being obtained in the same direction.

We observed in some of the other schools visited a method of instruction in the art of designing, which we would designate as the kindergarten plan, apparently better suited to young children than for advanced pupils, who are supposed to have prepared for this important work by a thorough course of training in drawing, light and shade, and color.

Varied colored papers with geometrical figures and stencils for cutting out the forms constitute the equipment for work. Selecting a sheet of one-colored paper as a foundation or ground work, the pupil proceeds to cut strips or forms from the supply of other colors of paper, and imitating or varying somewhat, a specimen pattern of wall paper or other fabric, constructs a design.

A single plant, flower or historic ornament analyzed and then adapted to some useful design, as is done in our own schools, demonstrates the capacity of the pupil in drawing. A two hours' time sketch in still life exhibits a pupil's knowledge of color, light and shade, but the kindergarten system demonstrates only the deftness of the scholar's fingers in cutting and pasting strips of colored paper on a given background.

THE SCHOOL OF DESIGN FOR WOMEN

in Philadelphia strongly resembles our day school, but with a more varied curriculum, including wood carving, technical instruction in practical designing and the life class upon the modern theory. This institution, in charge of Miss Emily Sartain, is certainly most ably managed, and, occupying the elegant mansion of the late Edwin Forrest, corner of Broad and Master streets, with a large addition recently built at a cost of \$40,000, is filled to its utmost capacity by appreciative young ladies who are working hard and accomplishing most excellent results.

SCHOOLS OF INDUSTRIAL DRAWING.

Of this class are the city evening schools in Boston, the night schools of the Cooper Union in New York, the Spring Garden Institute in Philadelphia, the Ohio

Mechanics' Institute in Cincinnati, the Drawing Department of the Manual Training School in St. Louis, and others of lesser note visited.

In most of these, as in our own schools, the later and more approved methods of instruction prevail. The old system of drawing from the flat is discarded, and the use of models is substituted. When the pupil has learned the free use of the pencil he is set to work upon the object itself, commencing, of course, with the plainer subjects, and proceeding with parts of machinery or building construction until he is sufficiently trained to undertake the entire machine or adaptation of a given structural design. Class lectures are also resorted to for practical instruction in the subject treated of and the student is taught the use and application of the object he portrays.

In some instances, however, we found the old system of drawing from the flat still in vogue, those in charge seeming not to have advanced with the modern methods of instruction, but being content to continue the plan of simply copying from paper the representation of the object instead of using the object itself as a model.

TRADE SCHOOLS.

The Pratt Institute in Brooklyn is a splendidly and thoroughly equipped trade school. The different branches of carpentry, brick-laying, stone-cutting, house and fresco-painting, plastering and plumbing, with wood-turning and pattern-making, moulding, forging, machinists' work and tinsmithing are well taught and practically illustrated. In the department of domestic science, cookery, laundry, hygiene and home-nursing, plain and fancy sewing, embroidery, dress-making and millinery are equally available for female students. So, too, the department of commerce embraces beside book-keeping and writing, phonography and type-writing. A technical high school department is also in contemplation, and the accommodations of the institution are about to be doubled by the erection of a building on the opposite side of the street from the present structure.

The Art department is admirably equipped and involves a thorough course in free-hand, architectural and mechanical drawing, with modeling and applied design. Added to all these are a fine library of 22,000 volumes and a technical museum of ores and minerals and their productions, building and decorative stones, textile fabrics, ceramics and glass, so arranged as to illustrate the evolution from the raw material to the finest manufactured productions.

This generous endowment will, no doubt, soon be imitated by the Drexel Institute in Philadelphia and the Jacob Tome Institute at Port Deposit. From our observation it is only to be regretted that the Tome Institute is not to be located in Baltimore, where, from necessity, its largest proportion of pupils must be drawn, and whose convenience would be greatly facilitated, as also that of the instructors, by a location in a large city.

ENDOWMENTS.

One prominent characteristic attracted our attention in nearly all the institutions visited, both East and West—the large resources at their command, either in the form of generous endowments, the large tuition fees available, or the fostering care of State aid or individual patronage supplying the ways and means to conduct the operations of the schools.

In the Massachusetts Normal Art and Boston City Evening Schools, where both tuition and materials are free, the State and City have supplied handsome buildings with complete equipments and salaried teachers in all the departments.

The museum schools are housed in elegant apartments with free access to the museums, enjoying great advantages, educationally, from such contact and encouraged by the influence of the art atmosphere surrounding. In some of these, which are generously endowed, tuition is provided at nominal cost, while in others a certain fashionable popularity commands large tuition fees from the pupils.

In some of the industrial schools, notably the Cooper Union in New York, the Spring Garden Institute in Philadelphia and the Ohio Mechanics' Institute in Cincinnati, liberal endowments have placed them in position to be independent of State or Municipal aid.

With larger means at our command we might extend the sphere of our day school and develop further the higher branches of art education. But it is better to do well and thoroughly that which we have undertaken than to weaken our efforts in this direction by branching out and enlarging the scope beyond the compass of our means.

That no school visited or of which we have any knowledge in this country, excels or even equals our own as an industrial drawing school we confidently maintain. So in the art department, as far as our curriculum extends, our work is as well done as the best, and in our judgment, better and more thoroughly done than in most of the schools inspected.

We would be glad to see our equipment of models and studies and the little nucleus of a technical library, as also our modest beginning of a museum added to as rapidly as our own means and the generosity of friends of the Institute will admit; but after mature consideration of all that we have seen and heard in our visit of inspection, we are not prepared to offer any suggestion of change in any important feature of the curriculum or methods of instruction in vogue in our schools.

Respectfully submitted.

JNO. M. CARTER,
WM. H. PERKINS,
ERNEST HOEN,
M. A. NEWELL,
OTTO FUCHS.

REPORT OF COMMITTEE ON MUSEUM OF ART AND DESIGN.

BALTIMORE, April 13, 1891.

To the Board of Managers of the Maryland Institute:

The Committee on Museum of Art and Design reports that during the past year a start, at least, has been made in the collection of art works for the use of the schools.

The permanent loan, by the Peabody Institute, of the casts of the Frieze of the Parthenon (the Pan Athenaic procession) and a number of the leading antique statues and busts, with a few examples of Ceramic art and metal work recently acquired, constitute, it is true, but a small collection; but they are a nucleus—a beginning, and it is to be hoped they may serve as an incentive to other good friends to increase our possessions in this direction, either by donations or loans.

It should be remembered that our Museum does not contemplate the very valuable art works alone. While these are thoroughly appreciated and constitute excellent object lessons for the more advanced pupils, examples of wood and metal work, pottery and glass of the plainer sort, wall-papers, oil-cloths, carpets, cloths, dress-goods, upholstery—well selected examples of industrial art of every description—serve as excellent suggestions to the students in the wide field of design.

Most of our recent acquisitions, for want of other available space, have been placed in the school rooms, but as the collection increases, the library, or some other apartment may be set apart for its better exhibition and preservation.

WILLIAM H. PERKINS,
M. A. NEWELL,
S. ECCLES, JR.,
JNO. M. CARTER,
G. HARLAN WILLIAMS,
ERNEST HOEN,
E. SCHMEISSER.

REPORT BY PROFESSOR FUCHS.

BALTIMORE, June 12, 1891.

To the Committee on Schools of Art and Design, Maryland Institute.

GENTLEMEN: In submitting to you this, my Eighth Annual Report upon the Art and Industrial Drawing Schools of the Maryland Institute, it gives me pleasure to state, that another very successful year has been added to the history of this useful and time honored institution. The day school classes were conducted substantially the same as last year, with a slightly increased number of students, the same corps of teachers and no material changes in the character of the work, which I think is quite up to the usual standard.

The evening classes again received such accessions that it at once became necessary to open new rooms for their accommodation. The room assigned to the graduating class of the Mechanical Division is admirably adapted to its purpose, well lighted, comfortable and convenient in every respect.

INCREASING ATTENDANCE OF STUDENTS.

Looking back over the series of reports extending over the last decade, we find a steady increase in the number of students every year, which proves beyond peradventure that there is a steadily growing demand for the acquirement of knowledge and skill in industrial drawing and the advantages of a liberal art education. By a comparison of these reports, an interesting fact is also revealed which indicates that the efficiency of the school and attainments of its pupils are outstripping in proportion even the increasing number of pupils, as the following figures will show:

Whole number of students in 1886.....	636
Whole number of students in 1891.....	852
Showing an increase during the last five years of.....	231
Or 36 per cent.	
Number of graduates in 1886.....	28
Number of graduates in 1891.....	66
Showing increase for the same period of 136 per cent.	

This is all the more remarkable when we consider that the standard of work and requirements at examinations are higher now than they were five years ago; still, the cause of this improvement is readily accounted for. In the first place a large number of our graduates from both day and evening schools, soon after they have graduated, and sometimes even before, find ready employment as teachers, draftsmen, designers, etc., which stimulates others in their exertions to qualify themselves, that they may also find such like employment. The facilities for study being enlarged every year by the addition of new models, casts, ornaments and a variety of excellent examples in designs of pottery, metal, glass, wall-papers, etc., etc., also the accumulation of students' works in drawing, painting and designing, which are retained every year and displayed upon the walls throughout the building, and thus constantly kept before the eyes of all the students, a wholesome atmosphere is created, which tends to inspire enthusiasm and promote zeal and ambition in the hearts of students as well as teachers, and their work and studies become a pleasure, not a task. The thorough organization, excellent discipline and untiring devotion of all the teachers to their work insure regular and prompt attendance and make the students ambitious to keep up with their classes and vie with each other as to who can do the best and the most work.

RECENT IMPROVEMENTS IN ROOMS AND ADDITIONS TO ART WORKS.

The improvements in the studio hall and lecture room, which were made during last summer, together with the acquisitions of antique statuary and Parthenon frieze, donated by the Peabody Institute, as well as the fine specimens of ceramic

and metal art works and ornamental wrought iron designs purchased by the Institute, also a large number of new designs in wall-paper, donated by Messrs. Warren, Lange & Co., wall-paper manufacturers in New York, have been a great benefit and are duly appreciated. I can not emphasize too strongly the urgent necessity of continued efforts to increase our collection of casts and such other works of art and manufacture as are found in the museums connected with other art schools, and think I fully voice the feeling of the Committee sent by you to visit the Eastern and Western cities a few months ago, when I say, that seeing everywhere the fine collections, freely accessible to art students, as well as the public at all times, and all these, either gifts or loans of public spirited citizens, we were painfully reminded of the necessity of making an earnest effort to come up with our contemporaries, and I sincerely hope that a strong and effectual movement may soon be inaugurated toward the establishment of an Art Museum in this city, without which no art school can be complete.

SATISFACTORY WORK IN DRAWING AS CONTRASTED WITH OTHER SCHOOLS.

We can point with pride and satisfaction to the work done in our technical drawing schools, which in point of thorough organization, equipment, attendance and results in free-hand, mechanical and architectural drawing are not excelled, and in its supply of models, specimens of various designs, etc., ahead of all other similar schools in this country. Having these facilities and an ample corps of competent instructors, all practically engaged in the branches they teach, we are enabled not only to teach our pupils the technical skill in drawing, but also to give them valuable practical information about designs, construction, adjustments of the various parts of machinery, etc. All of which cannot be accomplished by the old method of copying drawings, which, strange to say, is found still in vogue in almost every school we visited; a method of instruction which is cheap, and easy for the teachers, but of very moderate practical value to the pupils. The students of the art classes in the Day School have given a good account of themselves in their work and earnest devotion to the study of art; every branch is well represented by drawings and designs, paintings in water color and oil, heads and figures from life in charcoal, clay and pen and ink; which in point of intelligent treatment and artistic execution are quite up to the average of the preceding years.

WHAT IS NEEDED TO PROPERLY EQUIP AN ART SCHOOL IN BALTIMORE.

After extensive and careful examinations of all the leading art schools of this country with your committee of inspection, it would be difficult to suggest improvements in any of our art school departments, without calling for the necessary means which are required to extend any efforts in that direction; they mean an Art Museum and Gallery—where students can study the works of master artists—a library and lectures on art.

When these great adjuncts to our art school are supplied, the chain of attractive features of a great and progressive city will be complete. As Baltimore points with pride to its university, hospital and libraries, so let it have a fitting Art Museum as there is in St. Louis, Cincinnati, Boston Philadelphia, Chicago and New York.

With our present facilities we are already attracting many students from the Southern states. Can it be doubted that with such additional attractions, many more would come?

STATISTICS OF ATTENDANCE.

The attendance during the year was as follows :

DAY SCHOOL.

Regular Students	53
Special Students	71
Saturday Students	109
Total.....	233

NIGHT SCHOOL.

Free-hand Division	192
Mechanical Division	278
Architectural Division	144
Post-graduates	5
Total.....	619
Total in both Day and Night Schools.....	852
Graduates in Day School	3
Graduates in Night School	63

Respectfully submitted,

OTTO FUCHS, *Principal*.

ADDRESS BY HON. JOHN PRENTISS POE.

MR. PRESIDENT—LADIES AND GENTLEMEN: The far-seeing and public spirited men who, sixty-five years ago, founded the institution whose advantages these graduates have been privileged to enjoy and whose honors and best wishes they now take with them into the world, deserve well to be remembered by this community. Most of them, doubtless, realized that the work which they then began in earnest faith would need the slow nurture of laborious years before the fruition which their hearts hoped for could be publicly seen and acknowledged. Some of them perhaps, with true prophetic vision, pierced the thick clouds of the future and rejoiced, in anticipation, in the glad some development of their enterprise which enriches and strengthens us to-day.

TRIBUTE TO HON. JOHN H. B. LATROBE.

But one survives to witness the gratifying manifestations of the wide influence for good upon our people, of the Institute in whose establishment and success he and his co-laborers took such deep and sympathetic interest.

In this presence there is no need to name him. Instinctively, in grateful recognition of the example of his blameless life and the benefits of his many services, our thoughts turn to the learned lawyer, the finished scholar, the broadminded and honored citizen, the accomplished gentleman, who, in the vigor of faculties unimpaired, is still spared to rejoice with us in the completion of so many of the enterprises with which, from his earliest manhood even until now, he has been and is identified for the benefit of our City and State—none perhaps more beneficent than that for which we especially thank him and his departed associates so earnestly to-night.

No selfish purpose animated them—no hope of personal gain or political advancement influenced them in their attempt to promote in our midst a knowledge of the true dignity and power of the mechanic arts, and to stimulate a desire amongst our people for the systematic instruction which trains the eye to accuracy of measurement and the hand to rare delicacy of touch.

They were interested in the progress of the work and they knew that the plan

of their foundation was wise, and that with reasonable encouragement it would be sure to win its way to popular confidence and support.

When nine years later, the flames destroyed their infant enterprise, no doubt a sinking of the heart came over them, and amidst the financial gloom and disaster of that eventful period of our national history, postponement of its renewal until a more convenient season, was unavoidable.

But the spirit which had prompted their undertaking was not dead. The project which they had attempted to make a living reality in our city, still kept its place in their hearts and minds, and as the years moved on, the necessity and usefulness of such an Institute as they designed to establish, became more and more apparent. Other men with hopes as high and public spirit as enlarged as theirs, took up the work which they had begun, and at last, courage and faith and persistence met their reward in the refounding of the Institute whose annual commencement we hold to-night.

HISTORICAL REMINISCENCES.

During the forty years that have passed since the corner stone of the new building was laid, with attractive and imposing ceremonies, in the presence of a vast concourse, eagerly testifying their interest in what all regarded as a most significant public event, and since the finished structure was fully dedicated to the uses for which it was designed, the Institute has gone on steadily with its work.

Much discouragement marked its years of growth. Limited resources and at times a depressing lack of a warm and hearty public appreciation of what it was doing for the city, contracted and retarded its operations. But still its managers, full of the enthusiasm which springs from deep and strong convictions, pressed forward with unabated zeal and confidence in its ultimate triumph.

For many years it endeavored to popularize itself by most attractive exhibitions of large numbers of works of ingenuity, usefulness and beauty, and its Fairs are still most agreeably remembered as occasions of great public interest. For weeks in each year, throngs of our people poured into its immense Hall to inspect the multitudes of articles of every description deposited there as specimens of mechanical skill and handiwork; and no doubt, by bringing together these visible proofs of what our workshops and manufacturers could accomplish, an interest in mechanical pursuits was awakened and kept alive, which might not otherwise have been aroused.

The preparations for these public displays necessarily required a large expenditure of time, and frequently made heavy inroads upon the slender treasury of the Institute. Doubtless too, they had a tendency to create an erroneous idea in regard to its real objects and purposes. But it can not be denied that they made its existence familiar to our whole population, by laying before them, year by year, in most attractive form, the gratifying evidences of the progress of invention in a large number of the branches of mechanical industry—of the marked proficiency of our workmen in their several departments of labor, and of the steady advance in the knowledge of the beautiful and the useful in the inviting fields of art.

They could not fail to strengthen in this way its claims to popular sympathy and support, and the multitudes who visited its Fairs, oftentimes from mere curiosity, came to feel an interest in the Institute, which gratified their feelings of local pride, by communicating to the people at large a knowledge of the excellent work that was being done in their midst, in so many of the branches of human industry.

The conviction was, however, finally forced upon the managers, that the inconveniences and evils of devoting so much of the time and space of the Institute to these annual fairs, more than counterbalanced the good which they accomplished, and at last it was resolved to abandon them altogether and to confine its operations to what, under the condition of its treasury, seemed to be its more legitimate sphere.

No doubt this decision was just and wise. But I am sure there must be in this

audience very many who recall with pleasure, and not a few who remember with profit, these popular exhibitions. They certainly were extremely interesting displays in many departments, and quite a number of the articles exhibited showed a high degree of ingenuity and skill.

The prizes too, which were awarded, did much to stimulate into activity the industry and talent of our mechanics, and to encourage them to persevere in their efforts, and it is certain there were many to whom these public recognitions of their skill and proficiency came, as did the gold medals in 1851, in his struggling youth and obscurity, to our great sculptor, Rinehart, to console for days of labor, apparently unrequited, and to cheer in their bright dreams of success.

Important, however, as all this encouragement undoubtedly was; instructive as these regularly recurring displays of the workmanship of our city could not fail to be, especially in the visible proofs which they afforded of constant and steady mechanical improvement; stimulating, as the competition for public acknowledgment of superior talent and inventiveness was to the aspiring mechanic and handicraftsman, and to the prosperous manufacturers in their rival enterprises, it could not escape attention, that it was not by these instrumentalities, that the real, vital and permanent work of the Institute was to be effectively accomplished.

And so in 1878, the new departure took place, and the essential instruction, whose fruits we behold to-day with so much pride and satisfaction, was actively and earnestly pressed forward.

AN IDEAL COURSE OF LECTURES PORTRAYED.

I have often thought that in the plan of the original founders of this Institute or of those who refounded it in 1847, there must have been a place provided for full instruction in the history of mechanical philosophy and of public and domestic architecture. Dedicated as it was to the promotion of the mechanic arts, it seems to me that there could be no surer way of inspiring its pupils with enthusiasm in their work and of filling their hearts and minds with a high appreciation of the dignity and power which invest the labor of that instrument of wonderful and heavenly workmanship—the human hand—when strengthened by the vast resources of that still more wonderful and heavenly creation, the human mind, than by unfolding to them the development of mechanical art from its rude beginnings, when the uses and application of the sources of the mechanical powers were in their infancy, down to the marvelous manifestations of these later days.

Surely from the lips of competent and accomplished lecturers nothing could be more useful and attractive to the young and ambitious mechanic, to whom we look in large measure for the preservation amongst the races of the earth, of our national pre-eminence and power, than the story of the noble progress of his art. Told, as I know it can be told, not with tedious prolixity—not with minute and wearying details, but with perspicuous statement and in pleasing, simple style of narration and graphic illustration to the eye, it must enchain the attention and arouse the admiration of every mind which has a spark of appreciation of the wonders that have been wrought by human sagacity and genius, stimulated and inspired by the necessity of gratifying human wants.

Architecture too, in its chief and most important forms—what an instructive and enchanting recital could be made from the lecture platform, if we only had one, of such an Institute as ours, of its vast achievements, from the time when long before the Sesostrian conquests, its Pharaonic masters designed and constructed the massive sepulchres of the Princes of Noph, and carved out of the solid rock, the solemn Sphynx, fit guardian, in his almost impenetrable mystery, of the imperishable mausoleums of Egyptian Kings, through the successive ages that reveal

“The glory that was Greece
And the grandeur that was Rome,”

down to its majestic creations in our modern era of almost superhuman intellectual and artistic activity.

How the heart would throb and the mind be quickened under the glowing description from the eloquent lips of some cultivated and enthusiastic architect, of the triumphs with which it has emblazoned the pages of ancient and modern history! And how the work of such a school as this would receive a joyous impulse, if to the practical teaching which is paramount, there could be added historical explanation and illustration of the marvels which speak to us with such persuasive power of the splendor of nations and civilizations that have perished from the earth.

But these aids to the thorough instruction which our Institute would delight to offer, can not be furnished without the expenditure of far more money than comes into its treasury.

The learning and the eloquence and the scholarship are at hand. The lecturers who could place before our students in glowing phrase these stimulating recitals of the progress of mechanical art, and tell them of the architecture which in the ages that are past was a wonder, and is still a glory, and portray to them the grand and exquisite handiwork of modern genius, can be found.

But in the presence of straitened means—of hard struggles for existence—of patient, persistent effort to render the work of its schools intensely practical—in the absence of liberal endowment or even generous contribution from those upon whom Providence has bestowed the blessing, and cast the responsibility of immense wealth, these cherished hopes of a wider and still wider horizon of usefulness, can not as yet be realized; and so, discarding as beyond immediate reach, branches of instruction which they would gladly open up, if opportunity were offered, to our struggling young men and women; passing over some kinds of manual training most properly belonging to such an Institute as ours when thoroughly equipped, its Managers, with energies and resources concentrated upon the work which is now its crowning glory, have dedicated it to those special fields of labor which have made and will keep it, a power in this community.

THE MODEST WORK OF THE INSTITUTE IN DANGER OF BEING OVERLOOKED OR UNDERRATED BY THE COMMUNITY.

I ought perhaps, to be afraid or ashamed to say it, but it sometimes seems to me that there are multitudes of people in this good city of ours who know little or nothing of this great instrument of instruction in our midst.

It does its work so quietly, it moves on in its accustomed round of labor so unobtrusively, there is such an utter absence of ostentation and parade in its plans and methods, that what it aims at so worthily and what it accomplishes so thoroughly, is not even suspected by thousands of our people.

How many of our citizens know that night after night, six hundred and fifty young men, after their day's labor is done, overcoming the weariness of the body in their quenchless aspiration after the instruction that will give them taste, and delicacy and the skill to become masters in their craft, flock to our Institute to acquire there a knowledge of free hand, mechanical and architectural drawing; to become familiar, by the handling of the actual model, with the location and formation and use of every part, even to the most minute, of many varieties of machinery, and to learn how to design and construct, not merely from a study of drawings laid before them, but by a close scrutiny of the machine itself?

Grasping readily through this practical method of instruction, what studied from drawings only might oftentimes be mysterious and incomprehensible, clear light dawns upon their minds. Force, motion, proportion, dimensions, acquire a living meaning to them—wood, stone, iron, steel and brass, seem to adapt themselves each to its proper place, and as difficulties begin to disappear under the familiarity with shafting, pulleys, wheels, machinery, buildings which this artistic contact brings

to them, the brain acts upon the eye and hand—work ceases to be a weariness and clothes itself in the bright colors of a noble hope for better and higher things. They feel stirring within them the consciousness of undeveloped power. They long for the opportunity to prove their skill and strength, and aglow with honest pride over obstacles overcome and a useful and honorable accomplishment acquired by the sheer force of patient labor and persistence, they aspire—they aspire.

As part of the product of this training, we present to you to-night this large class of graduates of the Industrial Department. Following in the footsteps of their predecessors, and making way for those who, year by year, shall come after them, we know that from the students of this school the ranks of our mechanics shall be recruited with their best and worthiest and most accomplished.

Turning now to another department, how many of our citizens know that day by day, during a full course of four years, two hundred and fifty young women assemble in the Institute for regular and thorough instruction in drawing, painting in water colors, oil and on china, and modeling in clay, heads and figures from life?

Think of the elevating and refining influence upon the public taste, which in the course of a few years such instruction must necessarily exert. Think of the capacity for comfortable maintenance and support which it stimulates and develops in lines of employment most suitable for woman's sensitive frame, delicate touch and exquisite sensibilities.

Consider the important practical results of such a training. I do not refer merely to the culture of these art students in its broadening, ennobling effect upon themselves, nor to the intellectual and moral pleasure which they enjoy in their strivings after the beautiful—in the development of their artistic taste—in their aroused appreciation of the graces and charms of color and form and symmetrical proportion.

I do not refer to the lifting up of the soul from the rude things of the world to the contemplation of images of ideal beauty, that fill the mind with such exquisite, such indescribable delight, nor even to the scope and value of the attractive influence of these cultured women upon the social circles which their accomplishments gladden and exalt.

I do not speak of the comforts and elegance which the fruits of their labor in the employments for which this instruction qualifies them, bring into homes and firesides, that but for such training would not know and feel any mitigation of the hardships that surround the daily struggles of the children of toil.

THE DIRECT VALUE OF THE INFLUENCE OF THE INSTITUTE, TO THE COMMUNITY.

But in judging of the value of this Institute and of its claims for generous support and liberal endowment, I ask you to consider the benefits which it brings to you.

It is a school of art and design.

It endeavors to raise the minds of its students to a genuine appreciation of the beautiful in nature and in art, in order that this appreciation, made the more keenly sensitive and just by artistic training, may find ample scope for the gratification of *your* taste and the embellishment of *your* homes, by the combination of beauty with utility in every variety of pattern and design.

This is an object that comes home to each one of you with an immediate personal interest, and touches you at every point.

There is no ornament that you desire—no article of comfort or luxury that you use—no fabric of simplicity or elegance that you wear—no product of the workshop or the loom that you need—for which the brain and hand of the cultured artist may not design for your benefit or pleasure some new and attractive grace of form or coloring or decoration.

HOW ART DESIGN MAY ENTER INTO ARTICLES OF USE.

The bewitching bonnet that crowns the queenly head—the graceful shoe that encases the shapely foot—the princely robes that in every variety of shade and texture, and in every grade and style of elegance, shine resplendent in the realms of wealth and fashion—the modest attire that in its charming simplicity enhances the loveliness which gives back to it an additional grace—the rich tapestry and warm hangings that diffuse the sense of ease and comfort—the soft carpet that sinks noiseless under the step and invites to luxurious repose—the costly vases that suggest Etruscan genius—the massive bronzes that speak of heroism and strength—the delicate and variegated glass that excites amazement, and the exquisite china that challenges admiration—the superb silver, which, whether in the shape of grateful testimonial for distinguished public service, or finished for the less conspicuous uses of private life, seems, in its workmanship, to have almost reached the climax of perfection—the illustrated primer that fascinates the eye of infancy and the volumes of science and philosophy, history and fiction, embellished to the utmost of the engraver's skill, all tell of the vast empire of design in the world of art, and of the necessity for the culture which will secure for it an ever widening dominion, in its ceaseless efforts to breathe the glowing spirit of grace and beauty into every shape and form and pattern of things serviceable for the use of man.

The blessed sanctuary of regenerating Art, majestic in its proportions, imperishable in its construction, stands out in bold relief upon the clear mountain top—and its hallowed precincts echo to the tread of hosts of worshippers, to whom its ritual is a strength and consolation. But the valleys it looks down upon are thronged by myriads whose hearts are deadened that they can not feel, whose eyes are darkened that they can not see its glory and its grandeur. Its pealing anthems—its choral symphonies of praise and adoration awake no answering voices in their souls—the incense of its worship sheds no fragrance over them—the light that streams from its illuminated altars pours no radiance upon their path. But the blessed Evangelist which it ceaselessly proclaims, shall, sooner or later, reach even unto multitudes of them and lift them up, at last, to their kinship with the sky.

Go on then, gentlemen of the Institute, in your good work. A quickened appreciation of the value of artistic beauty, even in the humblest things of daily life, will spring up around and about you. An awakened and cultivated public taste will encourage and applaud you. And as the years roll on, we shall realize more and more, that “the feather which adorns the royal bird supports his flight; strip him of his plumage and we fix him to the earth.”

With the official list of the names of the members of the Board of Managers and of the standing committees for 1891-92, the account of the Institute proper is closed, that of the night schools follows :

MARYLAND INSTITUTE FOR THE PROMOTION OF THE MECHANIC ARTS, 1891-'92.

BOARD OF MANAGERS.

Officers.—JOSEPH M. CUSHING, President ; GEORGE R. SKILLMAN, Vice President ; JAMES YOUNG, Secretary ; EDWARD W. ROBINSON, Treasurer.

Managers.—*Term expires 1892 :* James H. Bond,* Samuel Eccles, jr., John L. Lawton, Robert K. Martin, Samuel W. Regester, William H. Shryock, Ernst Schmeisser, George C. Wilkins.†

Term expires 1893 : John S. Bullock, William Ferguson, Ernest Hoen, Joshua Lynch, M. A. Newell, William H. Perkins, G. Harlan Williams.

* Died August 11, 1891.

† Elected September 14, 1891.

Term expires 1894: John M. Carter, E. J. Codd, Ernest Knabe, Ferdinand C. Latrobe, James Pentland, T. P. Perine, Samuel R. Waite.

Actuary and Librarian.—George L. McCahan.

STANDING COMMITTEES, 1891-'92.

On Exhibition—George R. Skillman, chairman; Robert K. Martin, secretary; John M. Carter, G. Harlan Williams, John L. Lawton, Samuel W. Regester, Ferdinand C. Latrobe.

On Schools of Art and Design—John M. Carter, chairman; M. A. Newell, secretary; James H. Bond,* John L. Lawton, William H. Perkins, Robert K. Martin, Ernest Hoen, Ernest Knabe, James Pentland, Samuel Eccles jr., William Ferguson, E. J. Codd.

On Museum of Art and Design—William H. Perkins, chairman; M. A. Newell, secretary; John M. Carter, G. Harlan Williams, Samuel Eccles, jr., Ernest Hoen, Ernst Schmeisser.

On Library—G. Harlan Williams, chairman; Joshua Lynch, secretary; Ferdinand C. Latrobe, Samuel R. Waite, William H. Shyrock, T. P. Perine. John S. Bullock.

On Hall—James Pentland, chairman; E. J. Codd, secretary; James Young, John L. Lawton, Samuel W. Regester, William H. Shyrock, John S. Bullock.

On Commercial Department—T. P. Perine, chairman; James Young, secretary; M. A. Newell, Joshua Lynch, James H. Bond, Samuel R. Waite, Ernest Knabe.

Executive Committee—Joseph M. Cushing, chairman; John M. Carter, secretary; George R. Skillman, William H. Perkins, G. Harlan Williams, James Pentland, T. P. Perine.

On New Inventions—Samuel Eccles, jr., chairman; George R. Skillman, secretary; Robert K. Martin, David L. Bartlett, George L. McCahan, William Ferguson, Ernst Schmeisser.

* George C. Wilkins appointed on Committee in place of Mr. Bond, deceased.

MARYLAND INSTITUTE—THE NIGHT SCHOOLS OF DESIGN.

It will be seen by a reference to the quotation from the address of President Vansant in 1851, which is given on a preceding page, that the importance of the night drawing classes was fully appreciated by the early founders of the Institute. These classes have been continued from their first opening.

The following account of the school as it then was, is taken from an article in the *Baltimore American* of September 22nd, 1874.

THE FIRST FOUR SESSIONS.

Fully appreciating the power of invention as the lever which lifts the mechanic arts to a higher plane, the founders of the Maryland Institute hastened to organize a school for instructing boys and men in the elementary principles of mechanical drawing. The school was opened in December, 1848, in a small room on the third floor of the old Postoffice building, on the corner of North and Fayette streets. The only instructor was the late Prof. Samuel Smith. During the first session only the simplest branches of elementary drawing were taught. At the next session the number of pupils was largely increased, and the services of two assistant instructors were required. But it was not until the new building of the Institute was erected that the school began to give indications of that extraordinary development, which has astonished even the most sanguine of its founders. During the third session there were three hundred pupils and five instructors. Up to this time the exercises practiced had chiefly reference to mechanical drawing, but with the beginning of the fourth session the course of instruction was greatly enlarged. It now began to be a real school of design. Pupils were first taught the principles of drawing, and were then encouraged to furnish original designs for machinery, buildings, and useful and ornamental articles, and a system of rewards and promotions was organized for the purpose of stimulating effort in this direction. Then the fine arts came into play, and such of the pupils as had the native capacity began to take lessons in painting, modeling and sculpture. Mr. William Minifie was principal of the School of Design during the fifth and sixth sessions,* and he was

*This gentleman foresaw the value of the introduction in all public schools of the study of drawing, thus anticipating by some years the movement undertaken in Massachusetts in 1870, as his published lectures, delivered at the opening and closing of the sessions of the School of Design for 1852-'3, and 1853-'4, clearly show. He had been for a year or two, about 1847-'8, in charge of the drawing classes in the public High School of Baltimore and secured excellent results, but was soon displaced by the authorities, who were, unfortunately for the interests and fame of Baltimore,—which city might easily have, in this matter, been in advance of Boston,—either ignorant of, or indifferent to, the importance of having the study correctly taught. In the light of the present movement (1880) it would appear that the authorities of the School of Design would also have done well to have retained this excellent instructor in charge. That he was exceptionally well fitted for such positions is shown by the fact that the "Text Book of Mechanical Drawing," of which he was the author, was adopted as early as 1850 as one of the regular books of instruction by the Department of Art of the Government School of Design of Great Britain and is still used in the schools of South Kensington. [Note by I. E. C., Editor of Art Report.]

succeeded by Professor D. A. Woodward, who has filled the place ever since, and whatever success has been attained is largely due to his skill as an instructor, and his enthusiasm in art.

THE INDUSTRIAL ART CLASSES.

The night school is open on Monday, Wednesday and Friday evenings from the middle of November to the middle of March. There are generally about six hundred boys and men in attendance, representing all classes of society and degrees of intelligence, and every grade of mechanical and artistic capacity. Girls are not admitted to the night school. The payment of three dollars secures a ticket for the entire session. The pupils are distributed in a dozen different classes, which occupy half as many rooms, and ten instructors go from desk to desk, assisting, encouraging, reproving or commending, as each particular case may require. The course of study and practice differs from that pursued at schools in one important particular; there is no definite period fixed for going through the successive branches of art, neither are the classes arranged with reference to the time that the pupil may have pursued a specified study. Everything is regulated by the degree of skill shown by each pupil.

When a boy first presents his ticket and is assigned a desk in the elementary department he is furnished with what are called "flat studies," which consist of pictures that can be copied by an expert lad without great effort. He transfers to his paper the profile of any human face, the outline of a familiar domestic utensil, pictures of animals, etc., until he acquires some facility in making lines and shades. Everything must be done by the eye; the pupil must use neither measure nor rule. If a boy cannot learn to draw straight and curved lines with approximate accuracy without instruments, he will never make an artist. As the pupil progresses with his picture-making, or rather his picture-copying, his work is closely watched by the assistant instructors, and specimens are submitted to the principal, who decides when he is entitled to be promoted to another class. He may remain in the primary class only a week, or he may stay there for three years (or for the rest of his life for that matter, if he chooses to pay three dollars per session).

As soon as the specimens show a capacity for drawing and a reasonable degree of skill, the pupil is put into another room. Here he learns to sketch from "the round," (in professional phrase). He is surrounded by statues, and models and "casts" representing the human form in many attitudes, and he is required to take a head, or an arm, or a bust for his model. The light is so arranged that the shadows are indicated on the object itself, and in making the shades which cause the figure to stand out from the paper he is only copying the phenomena of nature. If he goes through the several classes into which the pupils in this department are divided, he may hope to become an expert artist.

Mechanical drawing, etc.—Next in order in the night school are the classes that receive instruction in the drawing of mathematical figures, which involves a knowledge of the elements of the science of geometry; shading and drawing in India ink; architectural drawing, and designing for buildings and other structures, and mechanical drawing, designs and specifications for machinery, etc. Of course in these classes the use of instruments is taught, for mechanical drawing must be mathematically correct. This branch of art requires not only considerable skill, but a great fund of patience, and a neatness and accuracy in execution which can only be acquired by persistent practice. The young men who excel in mechanical drawing become designers of improved steam engines, the projectors of great engineering enterprises, and the architects of magnificent structures.

It must not be imagined that all the pupils who attend the night school become skilled artists. On the contrary, only a few attain to any great proficiency; but nearly all learn something that will be useful in afterlife, either as a source of profit or amusement. Out of the seven or eight hundred pupils who attend the day and night schools during the year, perhaps only fifteen or twenty will be awarded diplomas at the annual commencement for proficiency in any one of the branches of art.

An eliminating process is going on all the time. A pupil reaches a certain class, and is furnished with the "studies" that appertain thereto. Here he attains the limit of his capacity, and never rises beyond. Unless he is a very ambitious youth, determined to conquer in spite of natural defects, he will generally quit after some months' fruitless endeavor to gain promotion, and will retire satisfied with what he has already acquired. A great many of the pupils are boys who have no expectation of turning their artistic education to practical account, and, having no special motive for the exercise of patience and perseverance, they make no effort to obtain diplomas. Still, the training has not been lost upon them, and in after-life they may be quite as proud of their skill in drawing as they are of their proficiency in arithmetic or geography. It is an element of culture, as well as practical success, which ought not to be overlooked in popular education, and a boy cannot turn his winter evenings to better account than by devoting them to the study of drawing at the night school of the Maryland Institute.

The official programme of the courses and tuition fees of the school for the session of 1875-'6 was as follows:

MARYLAND INSTITUTE SCHOOL OF ART AND DESIGN, PROFESSOR D. A. WOODWARD, PRINCIPAL.

* * * * *

The Male (Night) School of Design will open about the 20th November, and continue every Monday, Wednesday and Friday until about the middle of March.

COURSE OF INSTRUCTION.

1. Elementary Drawing from flat studies, without measurement.
 2. Elementary Drawing with Pencils, from "the round" models, casts, etc.
 3. Elements of Geometry as it relates to the Arts of Design.
 4. Shading and Drawing with India Ink, with the use of Instruments.
 5. Architectural Drawing and Designing, for Buildings, Plans, etc.
 6. Mechanical Drawing, Machinery and Engineering.
 7. Artistic Drawing and Designing in Ornaments, as applied in Engraving, Lithography, Carving, Painting, etc., etc.: the use of Crayons, Modeling and Sculpture.
- Tuition Fees for the Session. \$3.

CARROLL SPENCE, *Chairman*.

The school of Design derives an income of \$500 per annum from the fund given by the late George Peabody, to be distributed in "Peabody prizes" to the pupils, for excellence in Artistic, Mechanical, and Architectural classes. Three of \$100 each, and four of \$50. It also received a bequest of \$10,000 from the late Johns Hopkins.

The pupils, for the year (1875-76) numbered 500, 450 of whom were men and boys. Ladies are not admitted to the night school. The evening schools are largely attended; there are eleven classes with eleven teachers. Industrial drawing is chiefly taught.

These industrial night classes comprise the greater part of the course of art instruction given at this time, 1875, by the Institute and afford practical and valuable aid to those seeking to obtain the rudiments of training in industrial art.

The total attendance upon the schools of Art and Design for the year ending August 1, 1877, was 441, of whom 54 were females; these latter were of course students in the Day School of Art; there were only some six male students in the Day School: there were then 381 pupils in the night classes. In the two schools there were 11 instructors, including Professor Woodward.

In the year ending August 1, 1878, there had been a total of 275 pupils in both schools, 40 of them were female students in the Day Art School. For the year ending August 1, 1879, the total was 281; 35 were female pupils in the Day Art School.

The spring and summer of 1879, as had been stated in the previous account of the Institute, witnessed the inauguration of a new policy and the complete reorganization of the schools.

New and commodious rooms, lighted and furnished in the most approved manner, were provided for the use of the night classes.

Such new material as was wanting, to complete the equipment of the schools, so as to furnish every needed facility for instruction, was procured. As these preparations were in the hands of the committee who had just returned from a tour of inspection of the leading institutions for art training in the northern cities, and were also made under the direct supervision of Mr. Hugh Newell, the experienced art teacher who had been called from Pittsburg, Pa., to take charge of the reorganized schools, it is safe to assume that no essential improvements were omitted.

The standard of the schools was raised. It was decided to begin "de novo;" as a consequence, no students would be graduated the first year.

A course of at least two years' attendance in the new school must be a prerequisite of graduation, and for contesting the Peabody Prizes.

The following official announcement of the opening for the season of 1879-80, and of the course of instruction, was published by the managers of the Institute:

THE NIGHT SCHOOLS OF DESIGN.

Open on Monday, November 17th, and continue three nights in the week (Monday, Wednesday and Friday) till the sixteenth of April. The curriculum embraces a complete course of Elementary, Artistic, Industrial, Mechanical and Architectural Drawing. This school was for a long time one of the most celebrated in the United States. It has been thoroughly reorganized; has been placed in new and commodious rooms, and will be furnished with every appliance which modern methods of teaching demand. The liberality of the late George Peabody enables the Managers to offer premiums amounting to \$500 annually to the seven highest graduates—three of \$100 and four of \$50 each.

Many of our fellow-citizens distinguished for their love of art, have exhibited a deep interest in this school, and have promised it moral support and effective material aid. It is hoped that a celebrated collection of casts will soon be added to those now on hand.

COURSE OF INSTRUCTION IN NIGHT SCHOOL.

ELEMENTARY CLASS—FIRST DIVISION.

1. Drawing in outline from flat examples.
2. Drawing from Geometrical Solids.
3. Drawing from Casts of Ornament.

ELEMENTARY CLASS—SECOND DIVISION.

4. Drawing from Details of Human Figure.
5. Shading in India Ink from flat examples and solids.
6. Application of Drawing to Design.

MECHANICAL CLASS.

- 1, 2, 3. As in Elementary Class.
- 4 (a). Practical Geometry and Perspective.
- 5 (a). Drawing from flat examples.
- 6 (a). Drawing from Models.

ARCHITECTURAL CLASS.

- 1, 2, 3, 4 (a). As above.
- 5 (b). Drawing from flat examples.
- 6 (b). Construction of Drawing from Measurement.

In connection with Professor Newell, as principal, five efficient and enthusiastic instructors were engaged; these are, Mr. McLaughlin, in Architecture; Mr. P. Wallace, Civil Engineering; Mr. Henning, Sculptor; Mr. J. W. Stowell, in Elementary Drawing; and Mr. Geo. B. Way, in Elementary Drawing. Mr. Way, a promising young artist, who was for some time an art student in Paris, is the son of the well-known Artist A. J. H. Way, a life-long resident of Baltimore, who has been ever active in all efforts to promote Art culture, and whose admirable pictures of still life, particularly his exquisite fruit pictures, are prized by connoisseurs. The influence of the new departure has been evident in the increased attendance and enthusiasm of the students. Down to April, 1880, 232 pupils have attended the night classes through the session; a few others attended a portion of the time. Of these, 86 studied Linear Drawing: 1st, Elementary—Drawing from familiar objects, as in England; 60 studied Linear Drawing; 2nd, Elementary—Historic ornament as used in government Schools of France. 30 studied Linear Drawing from the Round in crayon and charcoal. 31 studied Architectural Drawing from blackboard and measure. 25 studied Mechanical Drawing—projections and sketches of machinery and measurement.

The result of the work thus far has been very satisfactory, and the

Night School of Design gives promise of a long career of usefulness under its new auspices.

In the Thirty-third Annual Report (April, 1881) of the board of managers of the Maryland Institute reference is made to the doubts of its success felt by some of their number when the new art educational experiment was inaugurated the year previous.

The unprecedented increase in attendance of pupils which followed the new departure, the marked progress of the students, and the greater appreciation of the schools by the public, are declared to have completely allayed this anxiety. The report comments on the marked increase of beauty in all objects of taste, and on the increased demand for such objects that characterizes advancing civilization, and pertinently concludes that these undoubted evidences of a general demand for beautiful objects, indicating as it does the growth of art knowledge and artistic taste in the community, "should be responded to by a corresponding advance in every branch of industrial art education."

After reciting the steps taken by the Institute during the past two years to meet this demand, the large increase of attendance in the day art school recorded elsewhere is noted, 235 students attended the night schools, and, contrary to previous experience, this number held good through the season.

The teachers of the night classes were the same as the previous year with the exception of Mr. Wallace, who was succeeded by Mr. W. W. Towson. There were three graded classes of students in Elementary drawing and a class in "Drawing from the Round," a Mechanical class, and an Architectural class.

The year's work, under the direction of Mr. Newell, was a decided success.

The Thirty-fourth Annual Report (April, 1882) shows continued prosperity; it is given in detail in the preceding historical sketch of the Institute. The pressure of students necessitated ampler accommodations, which were secured. The day classes showed large increase in numbers and marked growth of enthusiasm, while 338 pupils were in attendance on the night classes, which were in charge of Mr. Newell and six assistants, an additional teacher being required.

The Thirty-fifth Annual Report (1883) shows continual accessions to the number of pupils both in the day and night schools. Nine assistant teachers were required in the latter as there was a total attendance of 456 pupils. Of these, 257 attended the preparatory free hand and artistic classes, 128 the mechanical, and 81 the architectural classes. The increase in attendance upon these, the branches directly bearing upon the practical needs of mechanics, was most marked. The discipline of the schools was good and the conveniences and facilities excellent. ~~Collected by A. M. Brown~~ of this year, as has been

stated, Mr. Newell voluntarily retired from the schools to devote himself to the practice of his art, retaining, however, his classes in the Johns Hopkins University. His success while in charge of the Maryland Institute schools had been, as we have seen, unprecedented in their history. The managers* fortunately secured the services of Professor Otto Fuchs, who was at the time head master of the Massachusetts Normal Art School, and who, especially as master of the "South Boston School of Art," an evening school of similar purpose with the evening classes of the Maryland Institute, which, under his management, was accorded precedence over all the free evening drawing schools of the city of Boston, had had ample experience in the work most needed by these night schools.

The organization that had been effected by Professor Hugh Newell laid the foundation for a still more rigid classification and the introduction of a prescribed progressive course of study, both in the Day school and in the Night classes.

The desires of private pupils were met in the Day School by the provision of classes of special students taking elective studies,—but the regular students were required to be as punctual and continuous in attendance as are the pupils of the Massachusetts Normal Art School; while all the pupils in the night classes are required to take the prescribed course and to attend regularly or to forfeit their right of attendance. In other words, a step forward has been taken and thorough and persistent work is to be required of the future pupils of the art schools of the Maryland Institute, which, by the setting up of this standard, is advanced to a higher grade of Educational Institutions, and, if the changes are persisted in, will soon possess claims to be ranked with the classes, under Mr. Miller, of "The Pennsylvania Museum and School of Design," and with the "Massachusetts Normal Art School." The irregularity of attendance and want of a graded and progressive course of prescribed study, has been the defect of all similar night classes; while the impatience and fickleness of private pupils has tended to impair the usefulness and degrade the standard of all Day Art Schools, dependent for success upon tuition fees.

If the Maryland Institute Trustees can so support the efforts of Professor Fuchs, as to enable him to persist in the execution of his programme, they will not only have served the best interests of this Institute and of the persons whom it seeks to serve,—but they will have wrought a good work for all other like institutions and efforts, throughout the United States.

If art industries are to receive any benefit and development from these instrumentalities, the pupils must be thoroughly trained, and that is impossible without persistent and progressive instruction.

*The committee in charge of the schools at this time (1883-1884) are to be credited with this wise choice: they were Messrs. Jones H. Bond, chairman; John M. Carter, John L. Lawton, George H. McCann, Robert K. Martin, George H. Pagely and William H. Perkins.

Practical results in the arts and manufactures are what the community has a right to demand of the art educational training schools which appeal to the community for support. Too often these have given but little training of any practical utility. The managers of the Institute Schools seem to be impressed with the necessity of securing practical results, and have, for several years, been steadily advancing in the path to success.

The following is from the circular of the schools, a pamphlet of 15 pages issued by the Institute, for the sessions of 1883-'84.

The Board of Managers take pleasure in announcing that they have effected a complete reorganization of the Institute Schools, the building having been thoroughly renovated and the facilities throughout greatly improved, to meet the demands of a first-class Art and Industrial Drawing School. Our aim being to place this school in the foremost ranks of its contemporaries, we have secured as Director Prof. Otto Fuchs, late Principal of the Massachusetts Normal Art School, and of the Boston Evening Industrial Drawing Schools, a gentleman who, for practical knowledge, long experience and eminent success as a teacher of industrial drawing, has gained a national reputation. Prof. S. Herbert Adams, a graduate with highest honors of the Massachusetts Normal Art School, has been engaged as Chief Assistant, and will take charge of the free-hand and fine art department. A corps of skillful and able assistants have also been appointed, and the studies so arranged and systematized that we can say with confidence, to all who desire instruction in either Industrial or Fine Arts, we will furnish you with the best that can be obtained.

On a recent visit to Boston we examined the works produced by pupils of the Normal Art and Evening Drawing Schools, and were so impressed with the excellence and practical value of the same that we say, unhesitatingly, no mechanic or worker in any of the numerous industries of this progressive age can afford to neglect such opportunities when they are offered at so small a cost and brought within the reach of all. * * *

EVENING CLASSES.

The evening classes are established for the express purpose of affording the best possible technical instruction to young men already engaged in or desiring to follow any occupation in which skill in either free-hand or instrumental drawing is essentially necessary. To meet this important demand a corps of efficient teachers, who have had long practical experience in their professions as specialists, are employed, the work so systemized that no time is wasted, and the most rapid yet substantial progress assured to all. The evening classes begin October 15th, and continue every Monday, Wednesday and Friday evening until March 15th. There are three general divisions: first, free-hand; second, mechanical; third, architectural drawing; each division having its elementary and advanced classes, and the full term in each division comprising three years.

ADMISSION FEES, &C.

Application for admission to the evening classes must be made the same as for the day school, and every applicant agree to attend regularly three evenings per week during the entire term. Sickness or other excusable causes for absence must be reported to the Principal.

Fee for the annual session of five months, \$3.00.

COURSE OF STUDIES AND CERTIFICATE WORKS.

[On half imperial sheets.]

I.—Free-hand Division.

FIRST YEAR.

1. Drawing in outline of geometric solids, first from blackboard, second from objects.
2. Drawing in outline of historic ornament, first from blackboard, second from cast.
3. Drawing in outline of plant form, first from blackboard, second from nature.
4. Drawing in outline of human figure, from copy.
5. Shading with stump, first from cartoons, second from objects.
6. An elementary design with a geometric form.
7. Geometry, plane and solid.
8. Perspective, theory and practice.

SECOND YEAR.

[Certificate drawings on half imperial sheets.]

1. Drawing from objects, shaded in point, stump or brush.
2. Drawing of historic ornament from the cast, shaded in any medium.
3. Shaded drawing, from cartoons, of a mask, bust or extremities of the human figure.
4. Drawing of a mask, bust or extremities of human figure, shaded in any medium.
5. Applied design for decoration of flat surfaces.
6. Applied design for sculptured ornament.

THIRD YEAR.

The course of study in the third year class is elective, and includes professional work, practical designing, &c.

[Certificate works on imperial sheets.]

1. Study from still life group, shaded.
2. Study from cast or life, of head in charcoal.
3. Original design, applied to either surface or round.

II.—Mechanical Division.

FIRST YEAR.

- 1-3. Geometrical problems, three sheets, from blackboard.
4. Orthographic projection, from blackboard.
5. Intersection of solids, from blackboard.
6. Development of surfaces, from blackboard.
- 7-9. Details of machinery, three sheets, from blackboard.
10. Details of machinery, from measurement.

SECOND YEAR.

- 1-2. Geometrical problems, two sheets, from blackboard.
3. Orthographic projection, from blackboard.
4. Intersection of solids, from blackboard.

5. Projection of screws, from blackboard.
 6. Pulleys and belts, from blackboard.
 - 7-8. Gear wheels, plain and bevels, two sheets, from blackboard.
 - 9-10. Machine drawing, elevations and sections, two sheets, from blackboard.
- Note. All the first and second year drawings to be on half imperial sheets.

THIRD YEAR.

The course of study in the third year class is elective, and will consist of making practical working drawings, general plans and details. The certificate drawings must be not less than three imperial sheets.

III.—Architectural Division,

FIRST YEAR.

- 1-5. Same as Mechanical Division.
6. Isometric projection, from blackboard.
- 7-9. Details of building construction, three sheets, from blackboard.
10. Plans of a wooden building from blackboard.
11. Elevation of a wooden building from blackboard.

SECOND YEAR.

- 1-4. Same as in Mechanical Division.
 - 5-6. Plans of a brick building, two sheets, from blackboard.
 7. Elevation of a brick building from blackboard.
 8. Section of a brick building from blackboard.
 - 9-10. Structural details, building, two sheets, from blackboard.
- Note. All the first and second year drawings to be on half imperial sheets.

THIRD YEAR.

Drawing plans, elevations, and designs from sketches or data.
The certificate drawings must be not less than three imperial sheets.

Examinations.—The last week of the annual session will be devoted to examination exercises. Before entering any advanced class students must be qualified to the satisfaction of the Principal and have passed examinations in the previous year's course.

All pupils of the schools must be members of the Institute. The Membership Ticket includes the free use of Library, and the privilege of entering the schools on payment of the fees named.

Membership.—Membership, per annum, \$3; Male Life Members, \$25; Female Life Members, \$10.

Peabody Prizes.—Prizes will be awarded to graduates of the school, as formerly, in accordance with the provisions of the will of the late George Peabody, through whose liberality the managers are enabled to reward the most meritorious graduates by money premiums in sums of \$100 and \$50.

Rules and Regulations.—All regular students are required to be in their places and ready for work at the appointed time. All passing in and out or about the building must be done in a quiet and orderly manner. Students must remain in their places and not engage in conversation during school hours. No drawings are allowed to be taken from the building before the end of the term except by permission of the Principal. Regular students absent from the school three times in succession, without notice or excuse, will lose their places, and can be reinstated only by the Principal, to whom application must be made for readmission.

The desire has been expressed by persons of advanced age to study industrial drawing. The managers would gladly make such provision if a sufficient number of persons will apply to warrant forming special classes on Tuesday and Thursday evenings.

F. C. LATROBE, *President*.
JAMES H. BOND, *Chairman*.
OTTO FUCHS, *Principal*.

In his first report, dated June 3, 1884, Professor Fuchs gives the record of the year's work. Such portions of this report as relate to the general history of the Institute have been given in the previous pages. The following quotations relate directly to the night classes. He gives the statistics of attendance upon these as follows:

Number in Free-Hand evening classes	255
Number in Mechanical evening classes	149
Number in Architectural evening classes	105
<hr/>	
Total number in Night School.....	509
Number of Graduates in Free-Hand evening classes.....	2
Number of Graduates in Mechanical evening classes.....	6
Number of Graduates in Architectural evening classes.....	6

Total number of Graduates this year 14

Of these classes he says:

NIGHT SCHOOLS.

The night school term closed on the 14th of March, and many of the pupils expressed regrets that they could not come longer. Every room was filled to its utmost capacity, and the large amount of excellent work produced by the pupils shows that most of them have been faithful and attentive to their work. An inspection of the drawings now on exhibition at the Institute will show the complete course in the several divisions, commencing with the first rudiments of beginners in the elementary classes, going through the intermediate stages in regular progression and ending with the advanced original work of the graduates. * * * .

I think that by careful study of the courses which are fairly illustrated by the work on exhibition, it will be found that our aim is primarily to teach our pupils in the night schools industrial drawing, original construction and designing rather than imitating or mere picture making.

The elementary work in the free-hand division consists of outline drawing from the black board and from objects placed before the class, geometrical drawing, perspective and elementary design; principles and methods are explained by lectures and diagrams from the platform and the work executed under the supervision of the teachers. All the drawings when completed are collected, carefully examined, marked and recorded, those which appear unsatisfactory are returned, their faults explained and must be made again.

The second year work includes model and object drawing from the round, perspective, shading in charcoal and applied design.

The third year is devoted to drawing from still life, details of the human figure, heads and ornament from the cast, also practical designing; subjects being elective and suited to the student's special taste or occupation.

The first part of the courses in the first as well as second year classes of the mechanical and architectural divisions is identical; beginning with geometrical draw-

ing, orthographic projection, intersections and development of surfaces; having passed through these stages, those in the mechanical division begin drawing details of machinery, gears, pulleys, belting, etc., and in the architectural details of building construction, planning of houses, drawing plans and elevations of wooden and brick buildings, etc., in all this work the strictest accuracy and neatness in drawing is exacted and as much attention given to the teaching pupils how to read drawings as well as how to make them.

The work in the third year classes consists of designing machinery and buildings and preparing practical working drawings.

The last three evenings of the term are devoted to examination exercises, and the results are placed on exhibition together with the regular certificate drawings.

His opinion as to the excellence of the organization of the School and of the good work accomplished has already been given; he closes by expressing both his appreciation of the support given to the Committee and of the valuable services of his assistant teachers; mentioning Mr. S. Herbert Adams by name.

Committee on Maryland Institute Schools of Art and Design, 1884-'85.—James H. Bond, Chairman; John M. Carter, Secretary; John L. Lawton, William H. Perkins, Robert K. Martin, Ernest Hoen, Harry Walters.

Faculty.—Otto Fuchs, Principal; S. Herbert Adams, Head Assistant.

Assistants in Day School.—Miss Emma J. Gay, Miss Annie C. Volck, Miss M. Medora Adams.

Assistants in Night School.—A. B. McLaughlin, W. G. Keimig, Architectural Classes. George B. Way, J. W. Stowell, Free-Hand Classes. George Beadenkopf, Henry Adams, Mechanical Classes.

From the report made by Professor Fuchs on the work of the succeeding year, under date of June 2, 1885, the general statements have already been given in the account of the Institute. He gives the date of opening the Night Schools as October 13, 1884, and expresses the judgment that the work, both in the Mechanical Drawing class and in the Artistic class, has surpassed that of the first year of his instruction. Of the graduates he says:

The graduates in the Mechanical class have each made a complete set of working drawings of a steam engine, by their own sketches and measurements taken from a full size model, made for that purpose, by which they have not only learned to make the drawings in a thorough and draftsmanlike manner, but have also become familiar with every detail of the engine, its operation, and the adjustment of its parts. The assistance which this model has been to the students in understanding the subject is so manifest that the Architectural class should not be left without a set of models, showing the construction and framing of different parts of buildings, bridges, etc., any longer, and I feel sincerely grateful to the Messrs. and Miss Garrett for their generous donation, which will enable us to supply the same for use next year, and thus equipped I can assert with confidence that for general efficiency and thoroughness the Maryland Institute Schools are not excelled by any in this country.

The attendance in the several divisions has been as follows, viz:—

Free-hand	163
Mechanical	140
Architectural	86

Total 389

The number of graduates from the Night Schools is twenty-two, of which six belong to the artistic, nine to the architectural and seven to the mechanical division. The work of all the schools, both day and evening is now on exhibition at the Institute, and a careful inspection as well as unreserved criticism is earnestly solicited.

In the Annual Report of the Board of Managers for this year is the following report of the Night School. It will be seen that the managers and the Principal concur in the desire to improve the thoroughness of the instruction and to raise the standard of the school.

The Night School, while falling off somewhat in attendance from the preceding year, has nevertheless been well patronized. The policy of the Institute has been to keep up the standard of excellence in its graduates by awarding diplomas only to those whose merit entitles them to their receipt. This policy has been a cause of the falling off in the number of pupils in the Night Schools, many young men, becoming discouraged by want of success in not being advanced to a higher class after a year's study, leave the school, rather than, by beginning over again, win their promotion by the excellence of their work, instead of by the number of months they were engaged in it. This policy of the Board will nevertheless be continued, as by no other course can the value of the diplomas and the higher reputation of the school be maintained. That such a result follows is shown by a comparison of the examinations of the present with those of previous years, there being a gain in efficiency for the year 1884-85 over 1883-84 of 17 per cent. in the first year classes, 17 per cent. in the second year classes, and 9 per cent. in the third year classes. It is hoped, and believed, that under the able management of Professor Fuchs even more gratifying results will be hereafter attained.

The number of graduates in the Night School for the present year will probably be twenty-two, each of whom will have deservedly earned the diploma to be awarded.

In the report of the Board of Managers for the next year, 1885-86, the increasing prominence given to the schools in the work of the Institute, and the growing excellence of the schools, is stated.

They record the opening of the Night School on October 12, 1885, and its close on March 19, 1886, a session of sixty-four nights.

In Professor Fuchs's report for the same year, read at the commencement, the improved efficiency of the night classes is referred to with pride. He then says:

I congratulate heartily the young gentlemen who receive their diplomas this evening upon the excellence of their work and the faithfulness with which they have attended to their studies, and feel confident that wherever they may be called to apply the skill and knowledge they have gained, they will do honor to themselves and credit to the Maryland Institute. I deem it eminently proper, also, here to point to the fact that, although the Maryland Institute has borne an honorable reputation for its beneficent influence in the development of the Arts and Industries in Baltimore for many years, and its name is as well known as is the City Hall, yet a large number of citizens are wholly unacquainted with the moral and material good its schools are doing for the youth of this community. I hope, therefore, that all who feel an interest in the welfare and prosperity of our rising generation will not fail to pay a visit to the exhibition, which is open to the public on Wednesday, Thursday and Friday of this week. It is especially desirable that parents take their children; they will not only find the exhibition interesting, but instructive and

beneficial, as undoubtedly many youths may be impressed with the fact that there is something higher and nobler to engage their minds than to yield to the evil and demoralizing influences which lure many who have nothing to occupy their time evenings to seek entertainment in frivolous and questionable places of amusement.

He announces the innovation of the presence of lady students in the evening classes and hopes they may continue to come. The courses in Free-hand and Mechanical Drawing is the same as the year before; flat copies are abjured, and all drawing is to be done from the object. Of the work for advanced pupils he says:

The advanced work in free-hand is drawing of ornaments, still life and heads from the antique in charcoal; also designing of various objects. In the Mechanical class it is regular draftsman's work in machine drawing, the subject being a steam engine, of which a complete set of detail drawings, together with the general plan in two views, is made by actual measurement from a model. In order to prepare these drawings, every student must have handled every piece belonging to the engine, made two or three free-hand sketches of each piece, and measured all dimensions, and by this method become thoroughly familiar with the construction and proportions of the engine.

In the Architectural class every graduate must furnish a complete set of working drawings of a house, including plans, elevations and sections, drawn accurately to scale from a design which is furnished them in the form of a small prospective view. This method of rendering a set of building drawings corresponds precisely with the mechanical course by taking the students through the entire construction and planning of a house. I do not think that a more thoroughly educational and practical, as well as interesting method of drawing could be devised. The attendance has been very regular throughout the term, and it gives me great pleasure to state that the teachers are all perfectly in accord with the system of instruction, and have performed their duties with commendable zeal and ability.

The attendance in the several divisions of the Night Schools was as follows, viz :

	No. of Pupils.	No. of Teachers.	No. of Graduates.
Free-hand	150	4	4
Mechanical	118	3	10
Architectural	114	2	5
Total	382	9	19

The teachers in the schools during the year were:

Principal : Otto Fuchs.

Head Assistant : W. S. Robinson.

Assistants Free-hand Division : George B. Way, H. D. A. Henning, J. W. Stowell.

Assistants Mechanical Division : George Beadenkopf, Henry Adams.

Assistants Architectural Division : A. B. McLaughlin, W. G. Keimig.

In his report for the next year, under date of June 7, 1887, Professor Fuchs says very truly, that now having effected the desired changes in the organization of the Art schools and classes, there is little to add in the report of each succeeding year.

He notices the marked improvement in the regularity of the attendance on the evening classes, the good order of the pupils, and the great interest shown in their work by the more than four

hundred enthusiastic pupils. He remarks that, notwithstanding the fact of such large attendance, there is very little general knowledge on the part of the citizens of the valuable work that is being done in these evening classes, in which these youth and men, busily employed all the day, find opportunity for acquiring knowledge which is for them most desirable if not essential. He repeats his last year's assertion of the excellence of this night school, but urges constant attention to the provision of suitable models, etc., in order to keep abreast of the world's progress. He says:

To the graduates I wish to say, that when you have received your diploma, which is awarded you as a certificate of qualification, remember that it is to be taken in a limited sense, and means that you have acquired that proficiency which is required of you as students, but by no means covering all that is or ought to be learned. And let me say to you further, that those of you who desire to engage professionally in the art which you have chosen, you have but made a beginning, and need to improve every hour and grasp every opportunity that is offered you to advance yourselves. One of the most important that is held out to you now is the invitation by the committee to return next year and take the Post Graduate course, where it will be your privilege to devote your time to any special subject. The Post Graduate class is free, and is intended to give an opportunity to all who desire to become more proficient in any special subject. After having laid a thorough foundation in going through the regular course, those who appreciate and take advantage of this opportunity to work their way up will get to the front and be the first who are recommended when inquiries are received for draftsmen, teachers, or other positions for which their accomplishments qualify them.

The attendance during the year was as follows, viz:

	No. of Pupils.	No. of Teachers.	No. of Graduates.
Free-hand.....	159	5	11
Mechanical.....	132	3	15
Architectural.....	112	2	12
Total.....	403	10	38

The number of graduates from the night schools is by far the largest since the establishment of the Institute Schools. The highest number reached in any former year was 22, in 1855; this year we have 38, and I can say with much pleasure that every one has fairly earned his diploma. The entire works of each graduate are on exhibition, open to inspection by all who desire to examine them.

Committee on Schools of Art and Design, 1886-87: James H. Bond, *Chairman*; John M. Carter, *Secretary*; John L. Lawton, William H. Perkins, Robert K. Martin, Ernest Hoen, William S. G. Baker.

The Instructors in the Night School during the year were:

Principal: Prof. Otto Fuchs.

Head Assistant: Wm. S. Robinson.

Assistants Free-hand Division: H. D. A. Henning, J. W. Stowell, Charles H. Webb.

Assistants Mechanical Division: George Beadenkopf, Henry Adams.

Assistants Architectural Division: A. B. McLaughlin, W. G. Keimig.

The annual report by Professor Fuchs, read at the commencement exercises June 5, 1888, was almost wholly devoted to an account of the Night School and has been already given in the general history

of the Institute. The present prosperity and future promise of the Night School, with its prescribed courses and improved regularity of attendance, are duly set forth.

The number of pupils in the several departments of the Night School is given as follows:

Free-hand	133
Mechanical.....	204
Architectural.....	137
Post Graduates.....	7
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Total.....	481
Graduates in Night School, 31.	

INSTRUCTORS IN THE NIGHT SCHOOL FOR THE YEAR 1887-88.

Principal: Professor Otto Fuchs.

Head Assistant: Wm. S. Robinson.

Free-hand Division: H. D. A. Henning, Charles H. Webb, Elmer V. Potter.

Mechanical Division: Geo. Beadenkopf, Henry Adams, Benj. J. Dashiell, Jr.

Architectural Division: A. B. McLaughlin, W. G. Keimig.

The annual report for the year 1888-'89, by Professor Fuchs, the Director of the Schools, was read at the commencement, June 4th, 1889, and has been here freely quoted from in the preceding general history of the Institute.

The acquisition of valuable models, both of machines and of buildings, with other articles for the fuller equipment of the Night School is acknowledged by the managers in their report.

The opening of a post graduate class affording free instruction for those who have taken the course of three years in the night classes is announced.

Professor Fuchs gives the following statistics of attendance on the schools under his direction.

The number of students attending the different classes during the year just closed is as follows:

DAY SCHOOL.

Regular students	50
Special students	86
Saturday students	92
Post graduates	3
<hr/>	
Total in Day School.....	231

NIGHT SCHOOL.

Free-hand Division	151
Mechanical Division	196
Architectural Division	132
Post graduates	7
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Total in Night School.....	486
Total in both Day and Night Schools	717
Graduates in Day School.....	9
Graduates in Night School.....	40

Instructors in the Night School for the year 1888-'89:

Prof. Otto Fuchs—*Principal*.

Wm. S. Robinson—*Head Assistant*.

H. D. A. Henning, Charles H. Webb, E. V. Potter—*Free-hand Division*.

George Beadenkopf, Henry Adams, Benj. J. Dashiell, jr., Herman Eisert—*Mechanical Division*.

A. B. McLaughlin, Wm. G. Keimig, F. E. Tormey—*Architectural Division*.

As both the Managers' report, and the report by the Director for the year 1889-'90, are here given in the history of the Institute, which precedes this statement of the Night classes; only the statistics of attendance and the list of Instructors will be given here. Reference to these reports will show that the Institute is prospering. Professor Fuchs, makes a strong appeal for an Art Library, and for increased collections of specimens of art work in ceramics, textiles, and general Decorative Art. His arguments showing the need and value of such collections are convincing. It may be suggested, however, that great care should be taken in the selection of such articles; for, unfortunately, many costly and new articles if set before the pupils as models for their imitation, and as illustrations of good taste, would be most misleading. In the forming of artistic taste every effort should be to teach the students to discriminate; to instruct them what to choose and what to discard, with the reasons therefor.

The attendance altogether in the different classes during the year just closed was as follows :

DAY SCHOOLS.

Regular students	48
Special students	75
Saturday students	98
Post graduates.....	5
Total.....	226

NIGHT SCHOOL.

Free-hand Division.....	164
Mechanical Division.....	202
Architectural Division.....	164
Post graduates.....	8
Total.....	538
Total in both Day and Night Schools	764
Graduates in Day School.....	6
Graduates in Night School	42

The instructors in the Day School are :

Principal—Prof. Otto Fuchs.

Teacher of Oil Painting—Miss Marie Keller.

Teacher of Modeling—H. D. A. Henning.

Teacher of Water color Painting—Albert Horstmeier.

Teachers of Charcoal Drawing—Miss Annie C. Volck, Miss Matilda Schaefer, R. R. Latimer.

Teacher of Drawing—Miss Elizabeth B. Murray.

The instructors in the Night School for 1889 and 1890 were :

Principal—Prof. Otto Fuchs.

Free-hand Division—H. D. A. Henning, Charles H. Webb, E. V. Potter, R. R. Latimer.

Mechanical Division—George Beadenkopf, Henry Adams, J. Henry Sandless, Herman Eisert.

Architectural Division—A. B. McLaughlin, William G. Keimig, F. E. Tormey, August J. Loeser.

As the Forty-Third Annual Report of the Managers, and the annual report by Professor Fuchs, for the year 1890-'91, are given in full in the preceding account of the Institute; it remains only in concluding this account of the Night School, to add here the list of the committee in charge of the school, and of the instructors in the Night School; as the statistics of all the schools and the list of teachers in the Day School are given in these reports. There was an attendance in all the schools of 919 pupils, being 105 more than attended the year before. Of these, 233 were in the Day School of Art and Design; 619 in the Night Drawing School, and 67 in the Commercial School.

COMMITTEE ON SCHOOLS OF ART AND DESIGN FOR 1891-'92.

John M. Carter, *Chairman*; M. A. Newell, *Secretary*; James H. Bond, John L. Lawton, William H. Perkins, Robert K. Martin, Ernest Hoen, Ernest Knabe, James Pentland, Samuel Eccles, Jr., William Ferguson, E. J. Codd.

INSTRUCTORS IN THE NIGHT SCHOOL FOR THE YEAR 1890-'91.

Principal—Professor Otto Fuchs.

Free-hand Division—H. D. A. Henning, Charles H. Webb, Elmer V. Potter, R. R. Latimer.

Mechanical Division—George Beadenkopf, Henry Adams, Benjamin J. Dashiell, Jr., Herman Eisert, Robert E. Hutton, George H. Hutton, Jr., William Wochsman.

Architectural Division—A. B. McLaughlin, William G. Keimig, F. E. Tormey, Augustus J. Loeser. Leander Neal, Jr.

CHAPTER IV.

THE GENERAL SOCIETY OF MECHANICS AND TRADESMEN OF THE CITY OF NEW YORK—FREE EVENING DRAWING SCHOOLS—THE SCHOOL OF THE NEW YORK TURNVEREIN AND ITS DRAWING CLASSES—THE HEBREW TECHNICAL INSTITUTE, NEW YORK CITY.

This ancient and wealthy Society began as a Mutual Benefit Association in 1785—Incorporated in 1792—Now occupies its own commodious building No. 18 East 16th Street New York City—Is an active educational force with its library and reading room, and with evening classes in Drawing and Modelling—Former distinction between the terms “Tradesmen” and “Mechanics”—Membership limited to these two classes who must also be citizens of the United States—Growth has kept pace with that of the City—First authorized to hold property amounting to \$50,000 now, after successive change of charters, empowered to hold \$1,500,000—Free School recognized by City Authorities in 1841—The Society also authorized to use its funds for support of the “Apprentices Library”—City authorized school to receive pay pupils in 1842—Educational powers enlarged 1856—Officers of the Society chosen annually by ballot—Committees appointed by President—Library in 1883 numbered 65,000 volumes—Elementary English classes dropped in the year 1858 as the City public schools were then well established—Drawing classes substituted—Ninety-Eighth Annual Report (1884) contains Inaugural Address of President John H. Rogers in reference to the celebration of the Centennial anniversary of the Society the next year—Extracts from this interesting address—Inaugural address of President John H. Waydell January 5th, 1885—Suggestions in regard to the work of the school committee—Proposes a practical elementary trade school—Announces that the Centennial celebration occurs on November 17th, 1885—The Centennial celebration—Extracts from the official account issued in a pamphlet by the Society—First evening, a Banquet with ladies attending, at Delmonicos—Second evening a meeting at Steinway Hall with an Address by Hon. Stewart L. Woodford—Address by Chief Justice Daly, who presided at the Banquet—William Wood founded in Boston early in 1820 “the first “Apprentice’s Library” in this or any other country”—Mr. Wood, aided by the members of this society, succeeded in opening a similar library in New York City May 25th, 1820—The several migrations of the Society and Library from City Hall Park, up town as the city and the society grew, recited—It abode for forty years in its own building in Crosby Street till, in 1877, it secured and occupied its present commodious building in East 16th Street—Course of Lectures established in 1835 and continued every winter since—Working mechanics and working women first admitted to the privileges of the Library, when the new home of the society was occupied in 1877—Response by Hon. Joseph Hawley, Senator of the U. S. from Connecticut—to the toast “The United States”—The Country by four years the junior of this society—This Society anticipated George Washington in seeking to promote American industries by protection.—“A patriotic aspiration” ninety-eight years ago!—The speaker prophesies that some of those present will live to see a population of 120 millions in the United States—Ex. Governor Hoffman responds for “the

State of New York"—This society teaches the lessons of the dignity and the rights of Labor—Anecdote of the late Mr. Joseph Harrison of Philadelphia who began life as a blacksmith—The Picture illustrating the Rabbinical Legend of "The Blacksmith and King Solomon"—Hon. Chauncey M. Depew responds for "The City of New York"—"The history of your Society is the history of the City"—for the charities and the free schools of New York, "are the safeguards of liberty and civilization in this metropolis of ours"—Recital of the fact that the associations for charity, the free schools, and the public library were all initiated by this Society—Mr. Depew thus credits it with having been a potent force in the best development of the City—The Rev. Robert Collyer responds for The Mechanic Arts"—Anecdote of the old shipmaster and Napoleon—Mechanics who come from the old countries to New York "have the chance to be twice the men they could be in the old world"—General Horace Porter recalls in his remarks the fact that this society sent to the field in defence of their country the first regiment of New York Engineers; which, for efficiency and distinction, had no superior in the service—Hon Abram S. Hewett in his remarks, states that his father was a member of this society and that he himself, then a boy of eleven years, drew his first book from a public library from the Apprentices Library when it was first opened in Crosby Street—He also refers to the fact that the name of John Campbell, the grandfather of Peter Cooper, appears among those of the first incorporators of this society—From the workings of this society Peter Cooper got the first idea of creating the institution which bears his name—It was his first intention to make this society his almoner—The limitation to Apprentices however deterred him, as he wished to give opportunities for education to all, instead of only to a limited class—Mr. Whitelaw Reid, editor of the New York Tribune, responds for the Press—"The Editors real business is to keep things out of the newspapers"—What the Community want to know and what the Community thinks—The newspaper that gives these succeeds; all others fail—"The newspaper obeys the majority"—The statesmen addressing you to-night have adroitly avoided any reference to the conflicts between Labor and Capital—This Society, by its pride in its origin, sets an example to all, that the two classes are still reciprocal—From laborer to employer is still, in America, a short step—Co-operation is better than conflict—Arbitration better than antagonism—Judge John A. Brady's brilliant response to the toast of "Women" closed the speeches—The building thrown open to the public the next day—The meeting at Steinway Hall opened with a few words of welcome by President John H. Waydell—The main object of the society was to relieve the unfortunate and to educate and elevate the workers—General Woodford's address was extempore and inadequately reported—Brilliant contrasts drawn between the conditions surrounding the first, and this, the one hundredth, meeting of the society—Examples of the Century's growth in humanity, civilization and christianity pointed out—Organized Labor must cease to deny to the young opportunity of learning trades or to the non union man the right to work—Must cease to be tyrannical—Only when it learns to be just, will combined labor win true liberty—Historical sketch of the Society—prepared by the Secretary Mr. Stephen M. Wright and appended to the Report of the Centennial commemoration—Interesting extracts from this sketch follow—The history of the School—Mordecai M. Noah, Esq., the distinguished editor, gave the Inaugural Address at the opening of the New Building in Chambers Street in 1821—The school, opened in 1820, was closed in 1858 as no longer needed—A free evening school begun by a member in 1822 was formally adopted by the society in 1859 and still continues as a drawing school—The Library opened in 1820—Open only in the evening till 1854, when a regular librarian was appointed; since when it is kept open from 8 A. M. to 9 P. M.—A public reading room opened 1856, free to all—Special additions to the Library—The Lectures began Jan.

uary 1837—Professor Renwick delivered the first lecture of the course, his lecture was on Natural Philosophy—The several removals of the society recorded—Patriotic celebration of the Fourth of July always a feature—Stand of colors given early in the War of the Rebellion to First N. Y. Volunteer Engineer Regiment, composed exclusively of Mechanics (Col. Serrell commanding).—In April 1865, the Society issued an address of thanks to the Army and Navy of the U. S. for their services in preserving the Union—Description of the present building—List of the Committees in charge of the Centennial celebration—The One Hundredth Annual Report, December 31st, 1885—Summary of the various charters—Report for 1886—Report for 1887 contains inaugural address of President Wm. C. Smith delivered January 10, 1888—Suggests need of increased powers and funds to meet the ever growing demands—Inaugural Addresses by Presidents Bogert and Barratt, 1890 and 1891—List of officers for 1891—The Free Evening Drawing Schools—Drawing and Book keeping substituted for elementary English studies in winter of 1858-59—Book keeping classes discontinued 1880—An Evening Drawing Class for girls opened 1874—Article X of By-Laws of the Society which relates to evening classes quoted—Report of School Committee for 1882—About 200 men and boys, and fifty girls, in attendance in 1883—List of School Committee 1883-'84—Sessions held four evenings a week from October to March inclusive—Report of School Committee for 1883—Report for 1884—Statistics of expenses—Modelling in clay introduced—Influence of contemporary movement for general industrial education begins to appear in report for 1885—Success of modelling class—Women's drawing class abandoned in 1886—Classes for girls in type writing and phonography take the place of the drawing class—Report for 1886—Male pupils number 300—38 young women who graduated in phonography and typewriting soon found employment—Report for year ending December 31st 1887—Statistics of expenses—205 male pupils—89 girls in the type writing and phonographic classes—The speedy opening of the J. Morgan Slade Architectural Library promised—The technical industrial movement gains such headway that in the spring of 1888 the abolition of instruction in free hand drawing is seriously proposed—Finally one of the two classes in "Free Hand" is retained—The establishment of a series of Trade Schools for practical instruction in special industries seems to be foreshadowed—As public schools and Art Schools multiply, and the general introduction of more or less of industrial training in all schools prevails, the specialization of the education given by the classes of this Society becomes more feasible and, perhaps, desirable—Condition of school from 1888 to 1892—List of School Committee for 1891—The School of the New York Turnverein—Drawing Classes—The School originally founded to teach Gymnastics and German, in 1852—Statistics of attendance in 1882 and in 1883—Children of all nationalities admitted—Large collection of Casts—Elementary Drawing taught to younger children—Cast and Free hand Drawing to older pupils—A Modelling Class—The Hebrew Technical Institute, New York City—The Hebrew Industrial School in Philadelphia referred to—History of the New York School furnished by Dr. Leipziger the Principal—This school for the technical instruction of boys was formed by members of Hebrew benevolent societies. Opening in East Broadway in 1884, it soon outgrew its quarters and removed to larger rooms in Crosby Street—A public meeting in aid of the School held in April, 1886—Addresses by Hon. Carl Schurz, Rev. Dr. Gothiel, Dr. Moses, Jesse Seligman, Esq., and Dr. H. M. Leipziger—A Society for the support of the School then formed—The School, on February 1st 1887, took possession of its permanent home, the premises Nos 34 & 36 Stuyvesant Street, which had been procured by the Society—Letter from Dr. Leipziger, principal—Courses of Instruction and schedule of studies—Circular—List of officers of the Association and of Instructors in the School.

THE GENERAL SOCIETY OF MECHANICS AND TRADESMEN OF THE CITY OF NEW YORK.

This ancient and wealthy Society, which occupies its own commodious building known as Mechanics Hall, No. 18 East 16th street, and which, by means of its Library and Drawing Schools, is one of the active educational forces of the city, had its origin in the latter part of the last century as a mutual benefit association of Mechanics and Tradesmen, for aid of its members and their families, in cases of sickness and death; "the term "Tradesmen", being then applied to workers in leather, or cloth, as distinguished from "Mechanics", who worked in wood, stone, or iron."

It was incorporated for these benevolent purposes in 1792, and was authorized to hold property not to exceed, including real and personal property, the sum of \$50,000. Its charter has been several times renewed and in the additional duties and powers assumed under these succeeding charters may be traced the steady development of this association; which, beginning with a membership of less than two hundred citizens, coming together for the sole purpose of rendering mutual pecuniary aid in times of trouble, has, while never ceasing from carrying out the original purpose of the society, added to the instrumentalities for conferring benefits upon its members and on society in other ways, while steadily accumulating wealth; the last due, doubtless, in part, to the rapid growth of the city. This Society, whose power to hold property was limited in 1792 to \$50,000, is now authorized to hold property to the amount of \$1,500,000. In 1841, the officers of the Society, were by law, authorized to appropriate a part of their funds to the support of a school for the gratuitous education of children of deceased and indigent members of the said society; and, also, to the establishment and support of an Apprentices Library, for the use of the apprentices of Mechanics in the city of New York." The Commissioners of school money were also ordered to pay to this society their pro rata share of school money based on the ratio of the number of the children they taught, to the number of other children so taught, gratuitously, in the City.

In 1842, they were permitted to receive pay pupils, in addition to those entitled to gratuitous instruction; the profits to be applied to the uses of the Apprentices Library, and they were also authorized to establish a separate fund for the Library not to exceed \$10,000.

In 1856, the educational powers of the Society were indefinitely enlarged; as they were then authorized to set apart any portion of their funds, also to receive bequests, toward the promotion and diffusion of literary and scientific knowledge."

Only mechanics or tradesmen, citizens of the United States, are eligible for membership. The initiation fee is \$50, and there are no other dues payable. *Digitized by Microsoft®*

The officers of the society are President, 1st & 2nd Vice Presidents, Treasurer, Secretary, and Collector chosen annually by ballot of members.

The By-Laws, direct the President to nominate and, with the consent of the society, appoint the members of the several committees.—The Committees “on Library,” and on Schools, consist of 12 members each.

The Library in 1883 contained 65,000 volumes, loaned annually to some 10,000 persons engaged in industrial pursuits. In the general classification of the books, 2,465 are given under the subjects of “Useful and Fine Arts.” There is, also, a free Reading Room, well supplied with periodicals and journals, which was established in 1878 and is constantly open; it was used by some 36,000 readers in 1881–’82.*

As the public school system was developed, the need for keeping up the elementary English school by this society ceased, and in the year 1858, these schools were given up; their place being filled by the drawing schools.

OFFICERS OF THE SOCIETY FOR 1883.

Daniel Herbert, *President*.

John H. Rogers, *Vice-President*.

John H. Waydell, *Second Vice-President*.

James J. Burnet, *Treasurer*.

Thomas Earle, *Secretary, Mechanics’ Hall*.

James Woolley, *Collector*.

The 98th Annual Report of the Society (1884), contains the Inaugural Address of President John H. Rogers, announcing that the succeeding year was the Centennial of the Society, which, as will be later seen in the Historical address by Ex. Chief Justice Daly, at the celebration of that occasion, had its birth in an association formed some few years before the first act of incorporation was passed.

The following passages are from President Rogers’ address:

“There is something strangely interesting in the contrast between the venerable old age of the body and the fresh and ardent youth of a number of the members. Recollections and hopes crowd upon us together; the past and the future are at once brought close to us. Our thoughts wander back to the time when the foundations of this Society were laid, and forward to the time when those whom it is our office to aid, to guide and to teach, will be the aiders, guides and teachers of our posterity. On the present occasion we may, with peculiar propriety, give such thoughts their course, for it has chanced that my Presidency has fallen on the closing of the first secular epoch. This is the ninety-ninth year of the existence of the Society, an event of which no individual sees more than one. It is natural, it is good, that a society like this, which has a corporate existence and a perpetual succession, should review its annals, should retrace the stages of its growth from infancy to maturity, and should try to find, in the experience of generations which have passed away lessons which may be profitable to generations yet unborn. The retrospect is full of interest and instruction. * * *

* Ninety-seventh Annual Report January 1st, 1883, p. 39.

Referring to the founders of the Society the Speaker said :

"Men never to be mentioned without reverence by every lover of our Association. * * * In 1785 they planted the germ which gave birth to the Association, where it raised its first voice, and where its youth was nurtured and sustained. There it still lives in the strength of its manhood, and full of its original spirit, by which, alone, its existence is made sure. * * *

Perhaps it may be doubted whether, since the Christian era, there has been any point of time more important to the highest interest of mankind than that at which the existence of the Society commenced. It was a short time after a great destruction and of a great creation, the beginning of a happier period. A new era commences in human affairs, of civil and religious freedom, and of equal justice. We are nearing the point of a century from the birth of the Association. What a century it has been, during its course, accomplishing for human intelligence and human freedom more than had been done in all the centuries preceding ! The century is now closing. When we compare it with any equally long period in the history of any other society of similar magnitude, we shall find abundant cause for thankfulness. Nor is there any place in the whole country better fitted to excite this feeling than where we are now assembled ; for, in the whole country, we shall find no district in which the progress of trade, of wealth, and the arts of life have been more rapid than in the City of New York. Our Society has partaken largely of the prosperity of this City and the surrounding region.

To the closing century there are many names of which we may justly boast. The time would fail me if I attempted to do justice to the memory of all the illustrious men who, during that period by their aid and wisdom, brought the Society to its present high standing.

In a few months another secular period will commence. Ever since I began to make observations on the state of our country, I have been seeing nothing but growth. The more I contemplate our noble Association, the more convinced I am that it is sound at heart, that it has nothing of age but its dignity, and that its strength is still the strength of youth. I see no reason to doubt, that on a wise and temperate policy, on a policy in which the principle is to preserve what is good by reforming in time what is evil, our Institution may be preserved unimpaired to a late posterity, and that, under the shade of our civil institutions, it may long continue to flourish.

I trust, therefore, that when a hundred years more have run out, the Society will still continue to deserve well of our country and of mankind. I trust that the inaugural of 1984 will be attended by a still greater assembly of members than I have the happiness now to see before me. The assemblage, indeed, may not meet in the place where we have met ; our present hall may have disappeared. My successor may speak to your successors in a more stately edifice, in one of the magnificent buildings of the future New York, but though the site and the walls may be new, the spirit of the Institution will, I hope, be the same, and that my successor will be able to boast that the closing of the second century of the Society has been even more glorious than the first."

The annual reports of the various committees show a very prosperous condition of affairs.—That of the Library Committee shows constant addition to its volumes; that of the school committee will be given later, in the account of the Drawing Schools.

The 99th annual report for the year 1884, contains the Inaugural Address of the newly chosen President Mr. John H. Waydell, delivered before the society at the annual meeting January 13th, 1885.

In this address the duties of the several standing committees are

concisely stated and in each case the result of their labors summed up, and desirable changes in the By-Laws affecting them, suggested. After a courteous expression of thanks for the honor conferred upon him, the President said:

“With this Annual Meeting we enter upon an important historical epoch in the career of this Society, that of its “Centennial Year,” almost identical with the formation of the City government.

The original founders of this organization laid deep the corner stone of the structure, dedicated “To dry the tear from misery’s eye, to succor the afflicted, and save the sinking;” beginning with no lofty aspirations or even hardly realizing how well they built; by careful and judicious management of the means at their hands, and inspiring their successors to carry forward their good work, we are, to-day, enabled to enjoy the gratification of seeing an income of nearly \$35,000 devoted entirely to benevolent and educational purposes.

Looking back through the annals of the past century, we find many kindred societies blooming more rapidly into active life, flourishing for a season, and then passing away; while ours, true to its original purposes, yet steadily moving onward, step by step, increasing its usefulness as its income would permit, until to-day it has added to its beneficence a school, a free circulating library, reading rooms, and lecture course, all in a thriving condition.

My practical mind leads me on to briefly review with you the labors of the several standing committees, through which the business of the Society is conducted, and offer such suggestions for your consideration as have presented themselves to me; and request your thoughtful examination of the detailed reports presented at this meeting.”

He then recites the work of “The Finance Committee,” and “The Committee on Pensions,” the almoners of the Society’s funds who thus perpetuate

“its primary principles as best expressed in the original petition for a charter (1789) to raise a fund within themselves for the relief of their fellow members, who may, through the various vicissitudes of fortune, claim a share of their munificence to rescue from the cold hands of poverty and distress the mourning widow and helpless orphan.” * * *

His suggestions as to the School Committee are given in full.

“The School Committee in directing the management of the free evening classes in drawing, for boys and girls, is performing a duty which cannot be over-estimated. This Committee, originally created to conduct a day school for the children of members, and once so popular, was finally superseded by the Public School System; and our present evening school was introduced.

At the present time, the classes are full to their utmost capacity, and highly esteemed by all in attendance.

It has occurred to me, however, that it might be more in accordance with our name and calling to change the object from that of drawing to that of teaching the mechanic arts, thereby bringing within its scope the practical use of tools and implements used in the different trades.

In fact, should not this Society encourage young men to enter a school of this kind, by having it understood that any employing mechanic, in want of a youth, partly educated in his trade, would give the pupils of this school the preference? and in my opinion, if this idea could be successfully carried out, it would prove a benefit to the Society as well as to the youths of our city.”

The other committees noticed are "The Library," "The Literary and Scientific," "The Building and Sinking Fund," and "The Auditing Committee." He closes his remarks as follows:

"And now, brothers, after having as briefly as possible drawn your attention to the past of our Society, the workings of its various committees, and the flattering prospects of a more extended field of usefulness in the future, I will in conclusion state, that on the 17th of November, of this year, will occur the 100th anniversary of the assembling together of those 37 representative mechanics who founded and organized this society. In commemoration of that important event, I would recommend the appointment, at an early date, of a special committee to report the most feasible plan for properly celebrating that "centennial day."

To me this year has a personal significance, as it is the semi-centennial of my first entrance as a scholar in the *old school* of this Society; to me, then, a proud moment, but prouder still when, following the advice of my sainted father, I became a member of this society, and now stand here before you as its President. I feel it to be the crowning event of my life; and with the assistance of the efficient officers you have been pleased to elect, I shall, with my best endeavors, so hope to discharge my duties, that the progress of the Society may still be onward.

And let us all, invoking the blessings of Almighty God, so consecrate ourselves with renewed efforts to increase the usefulness of this organization, that at the end we each may receive the coveted and merited plaudit, "Well done thou good and faithful servant."

This year the Society celebrated the Centennial Anniversary with great éclat. First, by a brilliant banquet at Delmonico's, at which ladies were present, while many of the most distinguished orators of New York City, and elsewhere, responded to the toasts; and, second, on the succeeding evening, by a public meeting in Steinway Hall, when in the presence of a large and enthusiastic audience Hon. Stewart L. Woodford, delivered an oration; so that opportunity was furnished for all members and friends of the society to participate in one, or both, of these celebrations.

A permanent record of these memorable occasions was prepared and issued by the Society, in a very handsomely printed pamphlet; with a frontispiece showing the present home in 16th street.*

Extracts from the speeches and historical statements of this pamphlet are here freely quoted; because, apart from its particular interest in this connection, there is, incidentally, so much of general interest connected with the topics of this Report, and especially of this volume; as, for example, the account given by Congressman Abram S. Hewitt, the son-in-law of Peter Cooper, of the connection between *this* Society, of which Mr. Cooper's grandfather was one of the Founders, and the plan Mr. Cooper put in execution in founding Cooper Union; and, also, the personal reminiscence given by Mr. Hewitt, himself, of the time when he drew out his first book from the "Apprentices' Library," of this society. It is by like incidents, and by tracing

*"Centennial Celebration of the General Society of Mechanics and Tradesmen of the City of New York, Monday, November 16th, 1885, and Tuesday, November 17th, 1885, published by the Society." Digitized by Microsoft®

such other influences as several of the speakers took occasion to point out as directly, or remotely, resulting from the example of this society, that the real, far-reaching influence for good of such associations are realized, and their true value to the community appears. Much that is most suggestive in regard to the mutual relations of worker and employer, occurs in the remarks of the various speakers. That these after dinner talks were flashing with wit and enlivened with merriment, the names of the chosen talkers, among the most famous of the city, will fully show; it is, however, only their more practical, thoughtful suggestions that are here collated.

The record begins as follows:

CENTENNIAL CELEBRATION.

PRELIMINARY PROCEEDINGS.

At the annual meeting of the General Society of Mechanics and Tradesmen of the City of New York, January 13, 1885, the newly elected President, Mr. John H. Waydell, in his inaugural address, called the attention of the Society to its approaching centennial in the following words:

"On the seventeenth of November, of this year, will occur the one-hundredth anniversary of the assembling together of those thirty-seven sturdy representative mechanics who founded and organized this society. In commemoration of that important event, I would recommend the appointment, at an early date, of a special committee to report the most feasible plan for properly celebrating that centennial day."

At the same meeting, on motion of Mr. William H. Gedney, it was,

"Resolved, That so much of the President's address as refers to the Centennial of the Society, be referred to a special committee of nine, which number shall include the three principal officers who shall report at a subsequent meeting a plan or method by which the members of the Society may properly celebrate the one-hundredth anniversary of its existence."

In pursuance of this resolution, the President appointed the following named gentlemen as the Centennial Committee:

Messrs. William H. Gedney, John H. Rogers, W. Otis Munroe, Samuel A. Briggs, Gilbert J. Burnet, Douglas Taylor, Robert Rutter, Charles T. Galloway and John H. Waydell. * * *

At the September meeting Messrs. Stephen M. Wright, David Jardine, George H. Robinson, and John R. Voorhis were added to the Committee, increasing the number to thirteen."

The dinner was held November 16, 1885, and the oration was delivered November 17, 1885.

"THE BANQUET.

The members, with their wives and invited guests, were received, as they assembled, by the Banquet Committee, and having spent a pleasant half hour in perpetuating old friendships and the formation of new ones, were conducted to the spacious dining-room, which they completely filled.

At the request of the President of the Society, John H. Waydell, Esq., the Hon. Charles P. Daly presided. Seated with them at the guest-table were Hon. Joseph

R. Hawley, Hon. Abram S. Hewitt, Rev. Robert Collyer, Whitelaw Reid, Esq., Hon. John T. Hoffman, Hon. Chauncey M. Depew, Hon. Charles A. Dana, Gen. Horace Porter, Hon. John R. Brady, Ballard Smith, Esq., Hon. Stewart L. Woodford, William H. Webb, Esq., William H. Gedney, Esq. The members, with their individual guests, occupied six long tables, set at right angles with the guest table. The floral and other decorations were abundant, and in unexceptionable taste. Excellent music was discoursed by the orchestra stationed in the gallery, and a well-trained glee club contributed its share to the enjoyment of the occasion. The *menu* was served with such promptness, that at the very early hour of half-past eight the last course had been disposed of.

The report in the New York World of the next morning presents so vivid a mental photograph of the scene as to be worthy of perpetuation here :

"After a century of usefulness the General Society of Mechanics and Tradesmen sat down last night at Delmonico's to eat its Centennial dinner and listen to Centennial Jokes. Not like the founders of this ancient Society did the feasters assemble. Not with rough, rousing choruses that shook the rafters of the old Dutch taverns and made the fat bottles of schnapps dance on the shelves. Not with quaint queues and knee-breeches, and clay pipes with stems so long and so slender that the Lord only knows how they were kept whole towards the end of the meetings. There was no grandfather of Peter Cooper to head a committee and tell the landlady that drinks must be paid for on the spot, and not charged to the Society.

"Above the heads of the radiant company which met last night hung great milky bulbs of Bohemian glass brimming with electric light, which sparkled from walls thick with gorgeous gold tracery. Instead of the venerable choruses howled out of tune, there was an orchestra in a yellow gallery, from which came tremblingly 'The Flowers that bloom in the Spring' and 'Titwillow.' Soft perfumes came creeping over the tables from hills and valleys of roses and violets. A forest of candles mellowed the upper lights, and a grove of great lamps, with silken shades, bloomed in the middle of the room. Then there were massive mirrors reflecting a sea of happy faces. But the feature of the occasion was the presence of so many ladies, the wives and sisters, daughters and sweethearts of the gentlemen.

"What rows of respectability and solidity. What suggestions of ships on the ocean and miles of railways, and big, fat warehouses and limitless bank accounts. Around the seven long tables were grouped the unostentatious representatives of industries that were the backbone and the heart of the city in all its stages of development. * * *

The names of the guests, which followed, as they have been already given, are here omitted :—

"Down at the other table sat jolly old Forsyth Labagh, who joined the Society in 1828; C. H. Delamater, the iron-founder, and his wife; Richard Poillon, the ship-builder, and his wife; John Abendroth, Thomas E. Tripler and his wife and daughter; W. Otis Munroe and his wife and daughter; Thomas McElrath, John T. Agnew, Douglas Taylor and his wife; Andrew Little, Wade B. Worrall, George W. Lithgow and his wife and daughter; Hervey C. Calkin and his wife; Henry L. Slote and his wife; Alexander Knox, Charles T. Galloway and his wife and daughter; Robert Rutter and his wife; and Commissioner John R. Voorhis. There were men who had carved out great fortunes from the humblest and hardest beginnings on all sides. The whole scene was a tribute to honest labor, from the Rev. Dr. Collyer, who started as a blacksmith, down. It was a fitting end to the first century of this Society.

"Away back in 1785 it was founded in the hostelry or tavern of Walter Heyer, in King Street, now Pine Street. Hard times had come upon the thrifty toilers of Manhattan, and the purpose of the twenty-two men who organized the Society was

purely to give aid and comfort to mechanics and tradesmen who might feel the stress of poverty. Their widows and orphans were also to be provided for. It was a frugal, practical, hard-headed body, inspired by the success which the great guilds of Europe had achieved in the field of benevolence. In 1792 it united with the Manufacturing Society, and then it was that the idea of developing and elevating trade and the mechanic arts, as the guilds did, took root. The Society was at once chartered under its present name. In 1795 it adopted a naked arm and a hammer as its emblem and 'By hammer and hand all arts do stand' as its motto. At the beginning of the century it bought land at the corner of Park Place and Broadway and built the Mechanics' Hall, one of the most beneficent institutions ever conceived and the first of its kind in America. Later on the Society moved to Chambers Street. The Mechanics' Bank was founded by it, and the Society became a shareholder in it. In 1821 a school and an apprentices' library were opened. Thousands of elderly New Yorkers have once thumbed the pages of the books that filled the shelves of this library. Some of the greatest men in the State received their first education in the school. The library has now over 70,000 books. In 1856 a free reading-room was opened. A boys' high school was next opened on Crosby Street. So the Society has gone on for a hundred years, not only getting richer and stronger, but spreading useful learning and extending an open hand to the needy."

The dinner being concluded, the Chairman (Chief Justice Daly) called the assemblage to order, and in a felicitous and touching speech gave a brief epitome of the long and honorable history of the Society, declaring that it had originally given impulses to the City of New York which are still most powerful factors in its life :

OPENING ADDRESS OF BROTHER CHARLES P. DALY.

Ladies, Gentlemen and Brothers :—In taking, at the request of the President, Mr. Waydell, the chair, at this banquet, in commemoration of the 100th anniversary of our Society, I feel that it is due to our invited guests, and to the ladies, that I should say something respecting the origin and objects of the Society ; for, although it is one of the oldest in this metropolis, and the one having the largest revenue, it has done its allotted work so unobtrusively during the century that has gone by, that it is perhaps one of the least known of the societies of the city.

When it was founded, in 1785, there were in New York thirty-one different trades, or handicrafts, nearly all of whom had organizations of their own that combined with certain social and benevolent features the protection of the common interests of the particular handicraft ; regular meetings being held, at which the affairs of the craft were discussed and fixed dues paid, or collections taken up for the support of indigent members. They were, in fact, a continuation in a modified form, of the kind of institution that grew up with the development of the mechanic arts in the various countries of Europe, which were known by the general name of a guild.

To create a community of feeling and bring about co-operative action among the different trades in the city in the interest of the mechanic arts and the trades and manufactures of the country generally, appears to have been the object that led to the formation of our Society, which, as originally organized, was a representative body composed of delegates from the different trades, under the name of The General Committee of Mechanics. At least, I assume this to have been the object from such records as remain ; for no copy of the constitution that was adopted at the first meeting on the 17th of November, 1785, and printed, is now known to exist. What this representative body, or General Committee sought to accomplish, or did, does not appear. All that the records show is, that it held monthly meetings, at which dues were paid ; but the plan of a representative or federate body was evidently not successful, for in less than a year it was changed into an original body composed of members who were regularly initiated as in the other organizations,

adopting, like them, certain characteristics of the guild, which it still retains, such as the formal initiation of members, the ceremonious installation of officers, and the transaction of business only at meetings where none but members are present, and to distinguish it from the other trade organizations it was called The *General Society of Mechanics and Tradesmen of the City of New York*, every mechanic or tradesman of the city being eligible to membership, whereas, in each of the other organizations, membership was confined to those belonging to the individual trade.

SIGNIFICANCE OF THE TERMS MECHANICS AND TRADESMEN.

By the term "mechanic," we usually understand a person who has learned some one of the mechanic arts. The word "tradesman," however, has a more extended signification. It means, or it meant then, not only one who has learned a trade, but one who is a shopkeeper, as mechanics in many trades keep shops for the sale of the articles they make; and it is of this class of mechanics and tradesmen that the Society has always been composed.

The ostensible object of the Society, after it ceased in 1786 to be a representative body, as afterwards expressed in its act of incorporation, passed in 1792, was "to give assistance to members in case of sickness or accident; and for the relief of the widows and orphans of those who should die, leaving little or no property." For several years, however, some attention was given by memorials to the Legislature and otherwise to the encouragement of trade and manufactures, then an absorbing public topic; for the industrial interests of the country had suffered greatly during the American Revolution, and continued to be depressed for some years afterwards. The subject of trade and manufactures was consequently for some time the leading toast at the annual dinners of the Society, and was doubtless a frequent subject of conversation or discussion at the monthly meetings; but beyond this the Society did not go.

In 1789 it wisely determined by the passage of a formal resolution to take no part in elections, which kept it out of the troubled waters of politics; and thereafter its efforts were chiefly limited to the benevolent object stated in its charter—a field sufficiently large, for the Society rapidly increased in membership, owing to the faithful manner in which the duty was discharged of taking care of the sick, providing for the unfortunate, and looking after the widow and the orphan. As a benefit Society it was on a more comprehensive scale than the organizations in the several trades; for, not only, as I have said, was every mechanic and tradesman eligible to membership, but it embraced what the other societies did not—employers—a substantial class which has always been largely represented in it, and to whom it is mainly indebted for its long continuance, its successful management, and its large pecuniary resources."

There was another object, rather implied than expressed, which was, to keep up among the mechanics and tradesmen of the city a high standing moral character, a test of which was admissibility into the Society; and from a very early period every member had been advised in the charge delivered to him upon his initiation, that his admission is due to the testimonial the Society has received of his character for *industry, sobriety and integrity*. And in looking over the long roll of its members for a century there is not a single name, at least as far as my knowledge extends, of which it has reason to be ashamed.

PROSPERITY OF THE SOCIETY.

In 1802, it had so increased in resources and membership, that it erected for its use, at the northwest corner of Broadway and Park Place, what was long known in the city as "Mechanics' Hall," an imposing building in its day, the architect and builder of which was a member of the Society—John McComb—whose name I

especially mention, as he has left a more permanent memorial of his genius in the present City Hall, of which he was the architect and builder.

In 1810, the Society obtained the act incorporating the present Mechanics' Bank, a valuable franchise at that period; one-half of the stock of which bank was subscribed for by members, and a large part was taken by the Society itself, a portion of which it still owns.

THE NEW CHARTERS.

In 1812 the Charter of the Society expired by its own limitation; and, in the preceding year an act was passed extending the incorporation to 1890. In this act of renewal, and in an act passed in 1833, larger powers were given which enabled it to provide more fully for the support of indigent members, their widows and orphans, and also to carry out certain educational objects to which, for more than half a century since, its resources have been largely applied.

The carrying out of these educational objects, which had been in contemplation some time before the charter was renewed, was suddenly checked by the breaking out of the war of 1812, which proved so disastrous to the industrial interest of this city, as well as to those of the whole country, and therefore for several years the Society was simply continued, during which period its receipts, however, exceeded its expenditures, and its indebtedness was considerably reduced.

About eight years thereafter its prosperity revived with the general revival of business, and in 1820 it was able to establish a school for the education of the children of deceased or unfortunate members; and to take measures for the founding of a library for the use of apprentices.

THE FOUNDER OF THE LIBRARY.

The first apprentices' library in this, or in any country, was founded in Boston, in the early part of 1820, by a benevolent gentlemen named William Wood. This public-spirited man, having been applied to by the Society for information to enable it to establish a similar institution here, responded to the request by coming on to this city and devoting the whole of his time, for several months, to the furtherance of this object. During this time he visited the various workshops of the city; consulted with employers and obtained the names of seven hundred and forty apprentices who desired to become readers. By his efforts, aided by the liberality of many members, in the donation of books and of money, a library was established temporarily in a school building that then stood on a part of the present City Hall park, which was opened on the 25th of May, 1820.

In 1822, the Society erected a building in Chambers Street, upon land which it leased from the city for sixty years, for the school and the Apprentices' Library; which was used for the library and the school until 1833, when the necessity for more extensive accommodations led to the purchase of property in Crosby Street, then known as the High School, to which building the place of meeting for members, the library and the school were removed, where the society remained for forty-four years, when, it having become necessary to have a more central position, the present property in Sixteenth Street was purchased, and the society removed there in 1877.

THE SCHOOL.

The school was at first confined to the children of indigent members, but afterwards other children were received at a small rate of tuition; but who paid, and who did not, was never known in the school. That was known only to the committee having the school in charge. The school was an excellent one. It was largely attended, popular, and for many years was self-supporting. It existed for thirty-six years, when, in 1858, it was discontinued in consequence of the general

adoption throughout the city of the Public School System. Upon its discontinuance, however, the present night school was established, which has proved even more successful in the free instruction of apprentices and journeymen, in architectural and mechanical drawing, and in modeling for ornamental purposes.

In 1835, a winter course of lectures was established, which has ever since been continued.

The income of the Society has in some years been as high as \$70,000. It is now less than \$40,000, owing to the absorption of the capital in the purchase and erection of buildings upon the property in Sixteenth Street, and from other causes.

Upon the removal to Sixteenth Street the sphere of the Society's usefulness was enlarged by opening the library to journeymen mechanics, and to all working women; and it may gratify the ladies present to know that the number of females now making use of the library is as great, if not greater, than the males. During the past fiscal year more than 80,000 persons have taken out books and the reading-room during the same period has been visited by over 33,000 persons. The amount expended annually for the support of indigent members and the relief of widows and orphans is about \$5,000.

This is the Society's simple story of a century. It is the brief history of its practical work. A most important part of that work, in its wide-spreading effects, has been the establishment of the circulating library, and I could not, perhaps, more appropriately conclude my remarks than by expressing my own obligation to it. Fifty-seven years ago I was admitted as a mechanic's apprentice to take books out of the library, and had the use of it during the five years of my apprenticeship. It is to the means of self-instruction then afforded that I attribute the future course and avocation of my life, and as I am now within a month of retiring from a judicial office that I have occupied for more than forty-one years, it is with a feeling of deep gratitude to an institution that afforded me this assistance in my unaided youth. [Loud and long-continued applause.]

“SPEECH OF HON. JOSEPH R. HAWLEY.

In response to the toast “The United States,” Senator Hawley said:

* * * Permit me to congratulate you most cordially and respectfully upon the completion of the first one hundredth year of your history. It is a record of industry, of fraternity, of prosperity, of benevolence, of public spirit, of patriotism, of fidelity to every generous impulse and honorable obligation. I have read whatever I could find of its history and I am a stranger to it; yet, let me say, proud of it as peculiarly and purely American from its beginning to its end. [Applause.]

I find no fault with the narrowness of my theme—the United States. [Laughter.] Something may be said upon the subject. Indeed, sir, in the language of Edward Everett Hale, something has been said, and so well said that I do not feel it necessary for me to make any remarks upon the question. The twenty-two who were present at the foundation of the Society in a tavern the King Street, now Pine Street, one hundred years ago to-day, are to the present society, as regards resources and numbers, something like the three and a half or three and a quarter millions of Americans scattered along the coast are to the 58,000,000 spread from Vermont to Oregon, from the Lakes to the Gulf. But the subject of my few remarks is not so old as your Society. These United States started in life in 1789, and you are four years before them. You started with some very good doctrines, known for many years as peculiarly American—Henry Clay American. [Applause.] Before we had a Constitution or a Congress this Society was calling for measures of legislation that should tend to exclude to some extent articles made abroad which might be made in this country. [Applause.] I anticipate George Washing-

ton and the first Congress itself in the attempt to build up on this continent industries of all descriptions that should correspond to the resources which Divine Providence had placed here, and which we supposed He had placed here that we might use them. [Applause.] But I am not going to enter upon a political argument of any description. The idea was not political. It is ninety-eight years old—a general declaration. It was simply a patriotic aspiration in behalf of the people of this continent. [Applause.]

I shall not need to discourse upon the greatness of the United States. We are proud of it, proud of the name, proud of its present and proud of its inevitable future. Nobody can say too much about it, no poet can write too much about it, no orator speak too eloquently about it. I think that the United States have come now to a sort of table land, having reached a certain goal and end, you might say, of a race, and yet but the beginning of a race. In the great matter of political construction and political liberty we are ahead some years, possibly some generations, of the European nations. We have laid the great general foundations of government—finally and forever laid them. In many of these things there is absolutely nothing more remaining for any people on earth to do. We have absolutely universal freedom, absolutely universal suffrage, without regard to color or creed, equally before the laws, the ballot-box, the jury and the cartridge-box. [Laughter.] What remains? To free ourselves in some sort from the great political struggles and devote ourselves to what is the main business of mankind outside of Government contests. [Applause.]

Why, sir, there are men here who will see this nation with a hundred, a hundred and ten, a hundred and eighteen millions—yes, a hundred and twenty millions of population. They will see produced here every imaginable product of the soil. Every form of human workmanship will be produced within our borders. We have wonderful powers of assimilation and digestion, and the possibilities that are before us are wonderful indeed. I earnestly hope that this Society may live to see the next centennial."

“SPEECH OF HON. JOHN T. HOFFMAN.

Ex-Governor Hoffman, responded to the toast of “The State of New York,” and, among other things, said, as follows:

* * * I can understand why I am called upon to speak to this toast of the State of New York, because it was my fortune, or misfortune, to be for four years Governor of it. [Applause.] Why neither of the candidates for Governor at the recent election has been admitted, must be for the reason that they were not traders, [laughter] or mechanics, but by the general testimony of the partisan press were only “tools” [great laughter], and mere “tools” cannot be admitted to this Society.

There is a manifest propriety in making Chief Justice Daly your chairman this evening [applause], for not only in early life was he a mechanic’s apprentice, but for more than forty years has been on the Bench, where, as well as in his library, which is his workshop, he has been making cases full of books and books full of cases. [Laughter.] I will only add, all honor to our worthy master mechanic, the Chief Justice, whether on the Bench or off of it. [Great applause.]

* * * I have ladies and gentlemen, spoken in not a very serious way, and perhaps at too much length. [Cries of “Go on.”] This Society has for a century lived a life of usefulness. [Applause.] It has been a blessing to thousands, and its influence, as far as I know, has been for good, not only for employers, but employés, of mechanics and tradesmen. There are great questions in the present and the future, in the solution of which, within the sphere of its action, it must make itself felt. It has always taught the lesson of the dignity of labor, and it must also teach the lesson of the rights of labor. [Great applause.]

Many years ago, when in the City of Philadelphia, made a visit to Mr. Joseph

Harrison, who began life as a blacksmith, and was then one of the most wealthy and most honored citizens of that old Quaker City, so full of good men, and great memories. In his library was a large picture, which especially attracted my attention. It was a transfer to canvas, done with wonderful power, of the old Rabbinical Legend of "The Blacksmith and King Solomon." He told me he kept it there to teach his boys always to honor and respect that humble labor upon which his fortune and success had been reared; never to despise, or ignore, the small beginning which had accomplished so much for him and for them—and to strengthen their faith, that in the Providence of God, the firm and calm assertion of a right would always have its due recognition. [Applause.]

THE LEGEND OF THE SMITH AND KING SOLOMON.

The legend was something like this—briefly told. When Solomon had finished the Temple, he called all the architects and chief artificers to a great feast, and they gathered there. When they were seated, and the festivities had fairly begun, some one knocked loudly at the door, and entered the banquet hall. Solomon was wroth and asked, "What manner of man art thou?" and the man answered, "When men wish to honor me they call me the 'Son of the Forge,' but when they desire to mock me they call me 'blacksmith,' and I desire no better name." Then said Solomon, "Why comest thou here? I invited only the chief workmen of the Temple." And then he who had carved the cherubim cried out, "This fellow is no sculptor;" and he who had inlaid the roof with gold said, "He is no worker of fine metals;" and he who had raised the walls, said, "He is not a cutter of stone;" and he who made the roof said, "He is not cunning in cedar-wood." Then said King Solomon, "What hast thou to say that thou shouldst not be driven out?" Then said the blacksmith, "O king, live forever! I am their superior. Before they lived I was created. *I made the tools with which they all have worked.*" And Solomon replied, "Enough, go, wash the sweat of the forge from thy face, and come and sit at my right hand."

My friends, this is the first case recorded in legend or history, of a strike. [Laughter and applause.] It was not a strike for wages but for recognition and for right, and it was successful. It was made by an humble workingman, in his working clothes, in the presence of the greatest employer, and capitalist, and law-giver of the age. [Applause.] The story carries its own lesson and its own moral, and I will not enlarge upon it. Many who hear me now will have to take an active part in solving the problem of the relative rights of labor and capital. I can only say (and I say it to employers and capitalists and law makers) the wise solution of it will require all the firmness and calm dignity of the blacksmith, and all the wisdom and sense of justice of Solomon. [Great applause.] Depend upon it, "labor will always assert its rights. It may not be king, but it will have its seat at the right hand of the king, by whatever name he may be called." [Renewed applause.]

Another century of your existence begins. May it be a prosperous and useful one. To this "General Society of Mechanics and Tradesmen," I will only now say in closing, in the words of the blacksmith to Solomon. "O king, live forever!" [Great applause.]

SPEECH OF HON. CHAUNCEY M. DEPEW.

Chauncey M. Depew, in reply to the toast, "The City of New York," said:

* * * * *

But the history of your Society is the history of New York. The story of your origin and growth is the story of the origin and growth of this metropolis. What you have become is what the city has become. This great modern Babylon owes its

property, not to its commercial, its financial or its political power, but to its charities, to its humanities, its hospitality, its universal education. The open door of the free school everywhere, the open door of the hospital and the asylum, the Home for the Aged, the Indigent and the Distressed—they are the safeguards of liberty and civilization in this metropolis of ours. [Applause.] And I think that you can rightfully claim on this your centennial night that much of the real glory and true grandeur of New York are the fruit of the suggestions of your Society. You had a school before there was any free school in this city, and that school became so celebrated that you had to let down the barriers and let in those from the outside; and who can tell but that the suggestion of its benefits, which led men from it into the Mayoralty of the city and into the Legislature and the Judiciary, and to every place of power and trust and prominence, suggested this grand system of free schools which is the glory and pride of our city? [Applause.] You looked after not only the education, but also the welfare of the widow and the orphan, and of the unfortunate, and from that you can claim has sprung this grand system of charities which characterizes New York. And above all you were grand in your libraries. It is suggested that we have libraries and libraries in this town, for the scholar and the specialist. We have one that a man cannot go into, and it is time we should reach the other end of the string and have a library that everybody can go into. [Applause.]

Now, I trust, having reached the culmination of your Centennial, you will go on for another one hundred years, increasing in usefulness and power, equal at all times to the emergencies that may arise in the State which gave you birth; in another civil war to send forth another regiment and receive them back with their battle-torn colors; in peace to found more and larger libraries, schools and educational facilities for this city of yours and ours, and that we shall all meet one hundred years hence around the festive board of the Delmonicos of a hundred years hence, and that Chief Justice Daly will preside. [Applause.]

SPEECH OF THE REV. ROBERT COLLYER.

The Rev. Robert Collyer, responded to the toast, "the Mechanic Arts." When he arose to speak, he was warmly applauded. Some of his points were as follows:

I suppose I might well plead exemption from a speech because I said the Grace. It was the old custom, you know, when great lords kept chaplains, to bring the parson in to say the grace, and have some beef and pudding, and then go out. [Laughter.] But I suppose you wanted me to ask the blessing because I am a minister, and you desire me to make some remarks because I have been a mechanic. My heart responds to all the good things you have said about us, and I feel like replying, as the old skipper did to Napoleon, who bestowed upon him the cross of the Legion of Honor for some gallant things he had done and made a little speech commending him highly—and the old skipper said: "Your majesty has done right. I deserved it." [Applause.] I feel as if we deserve it all. I am glad to speak for the mechanic arts, because I think I still understand them better than I understand preaching. When once in a long while I happen to light on a hammer I made twenty-six or twenty-seven years ago, do you know I feel prouder of that old hammer than I do of any old sermon in my drawer! [Laughter and applause.] I like to think of the grand chances men who have to give their lives to the mechanic arts, find when they come to this New World. They have an opportunity to be twice the men here that they could be in the Old World. * * * I will tell you what is coming. Gentlemen by-and-by will say to their sons, "I think the grandest thing you can do is to go into one of those places devoted to the education of young men in this noble mechanic art; begin right down at the bottom and work yourself

right up until you are absolutely perfect in the things that make the greatness of your country," and I believe these men will go into the best society in this world and be received in it with pride. [Applause.]

SPEECH OF GEN. HORACE PORTER.

Chief-Justice Daly, in introducing General Porter, alluded to the mechanical operations that distinguished gentleman had been connected with, and to his trade as a soldier and his eminent services with General Grant during the Civil War. The General said in response :

I paid for my ticket to come here in the hope that I might escape the task of making a speech, and if I do not escape there is no benevolence manifested here. [Laughter.] I must first congratulate you upon the Christianizing sensation furnished this evening by having the ladies present here with us at a public banquet. I think it is a most delightful innovation, and I congratulate you that the General Society of Mechanics and Tradesmen have been so eminently successful in cultivating that grandest of all arts—the art of dining. * * *

Seriously speaking, gentlemen, I experience peculiar pleasure in being with you to-night. I know that after you had spent much money in the arduous task of dignifying labor; in elevating the industrial arts, and in disseminating education, you turned your energies in a new direction. Under your auspices was organized and sent to the field the first regiment of New York Engineers. I had the good fortune to have that regiment serve with me in the early part of the war. That regiment served with distinction, and in discipline, in courage and efficiency, it was a regiment that had no superior. [Applause.] I honor the Society for this, although, aside from it, if it had done nothing but dignify labor, it would be immortal. [Applause.]

Hon. Abram S. Hewitt, was the next speaker. He said:

* * * When I was asked to come to this dinner and to make some remarks, I told the Committee very frankly that I would not find much pleasure in the dinner itself, as I always run away from such affairs, but that they struck a very tender chord in my memory, when they asked me to come to the centennial anniversary of this Society.

A BOY'S FIRST SIGHT OF A LIBRARY.

My father was a member of this Society in the year 1810. [Applause.] When I was a boy eleven years of age, the Society removed its library to Crosby Street, and my father took me by the hand and led me up into the Apprentices' Library. For the first time in my life I saw books beyond the wildest dream of my fancy. I said to him, "I am your apprentice so that I can have some of these books." He said, "Oh, that is not necessary; you can take books; you can take them on my account." Then and there, with the opening of the library in Crosby Street, I took my first book. I took it home, and I shall never forget the impression that that book made upon me. I had heard a great deal of Shakespeare. I had been told that Shakespeare was the great poet of the English language. I wished to begin with him, and I took my first volume home with me. The first play that I read was "The Tempest." I diligently took volume after volume, until I had read every play of Shakespeare. I am bound to say that while, at that age, [I] could not understand fully the scope of what I read, that nevertheless the books that I thus took from the Apprentices' Library developed a taste for study which was the foundation of after tastes, and, until I went to college, I was a regular participant in the advantages of the Apprentices' Library. I attended the first course of lectures that was given by the Society. They were lectures given by Professor Ren-

vick on Chemistry. I am convinced that the courses of lectures on chemistry given by this Society have done much to educate the young men of this country in the application of science to business.

THE WISEST OF ALL CHARITIES IS TO TEACH SELF HELP TO MEN.

If the founders of this Society had foreseen the results which would flow from their efforts they must have been very far-seeing men. But I believe they builded wiser than they knew. They had, it is true, an idea of doing some charity, but it was the wisest of all charities—that of helping men to help themselves. It is such charity that brings out the best citizens and the truest men. There were many men among the founders whose names are now forgotten.

HOW THIS SOCIETY INSPIRED PETER COOPER.

There was one man whose name appears among the incorporators who ought to be remembered—I mean John Campbell. It is a significant fact that he was the grandfather of Peter Cooper [applause], and I have reason to believe that it was the interest that John Campbell took in this Society that gave some direction to the benefactions of Mr. Cooper. He learned a lesson from this Society which he never forgot. [Applause.] This Society is rich because it never sold a piece of real estate that it once got possession of. [Applause.] The Society gained much by its holding the valuable property at the corner of Broadway and Park Place. Peter Cooper saw the great advantages that the Society gave to the apprentices of New York. He also became familiar with the fact that boys and girls may be educated together, as was done in the old mechanics' school. He was determined to carry out the objects of this Society in a school of greater magnitude. And now I will tell you something that has never been told. It was a matter of serious discussion between Mr. Cooper and his family, whether the endowment which he proposed to make for the education of the working classes of this city should not be given to the General Society of Mechanics and Tradesmen. He very much desired that this Society should be the administrator of his bounty. The only reason why he concluded to not carry out his first intention was the fact that there was a limitation in your charter confining the benefits to the apprentices of mechanics and tradesmen. His idea was to aid in the education of the boys and girls of this city, without reference to the question whether they were mechanics' or tradesmen's apprentices. [Applause.] But the influence of this Society was very great indeed, when it moved one of your members to found an institution like the Cooper Institute. [Applause.]

There is one feature of this society which should not be forgotten. It is the mutual principle which pervaded its foundation. The idea was to make it not a mere charity, but to establish a place where the apprentice had a right to come. It was not an institution for mere alms-giving. It was a mutual insurance company. Its course has been marked by invincible impartiality. [Applause.] If it had done no more than to bring together an audience like this to look back on the work of a hundred years, it would have done much for the vindication of the wisdom of its founders." * * *

Then after a little skirmish with General Hawley he continued :

"I do not know anything that can more profitably occupy your attention than the contemplation of the signal results that have attended the efforts of this society to instruct the young in the mechanic arts. There is still room for much to be done. We are yet largely dependent upon foreigners for skilled mechanics. This Society has set the example for future success. [Applause.]

Mr. Whitelaw Reid, editor of the New York Tribune, was then called on to respond to "The Press," against which he humorously

protested that that was the one sentiment to which it was agreed he should *not* respond. He said :

But it was about time for this venerable toast to come in. When good food and good wine have wrought their perfect work on a company like this, there is pretty sure to come a moment of religious sentiment. [Cries of "Oh, oh !"] Don't misunderstand me. I didn't say Christian sentiment. There may be people who cherish a Christian sentiment about the press, but they are not vociferous on the subject. They are not people who have been interviewed ; not people who have had their names spelt wrong in the newspapers ; not people who have had their marriage notices carefully printed in the column of deaths ; not politicians who have had the sort of notice a friend of mine, a country editor, gave to a candidate who solicited a friendly mention. He gave it. He said John Smith, candidate for sheriff, was an excellent and hell-deserving citizen. [Laughter.] No amount of explanation about the way an "h" had slipped into the "w" box ever satisfied that man, that the press was a Christian institution. No, the religious sentiment that comes in with this toast is the African religion—the good old mumbo-jumbo kind of worship—given because, although he is known to be ugly, it is feared that he may be powerful and dangerous.

THE INTER-RELATION BETWEEN THE COMMUNITY AND THE PRESS.

The press is what you make it. It is a great mistake to suppose that editors make the newspapers. The best definition that I ever heard of an editor's work was that given a good many years ago by a veteran in the profession to a young man who was entering it. He said, "Young man, you think your business is going to be to put things into the newspaper. It is not so. Your business is going to be to keep things out of the newspaper." The newspaper is just what you make it. In the last analysis, a newspaper is the expression of what the community wants to know, and what the community thinks about it ; and if your newspaper fails in either of these branches it goes down. If it doesn't tell you what you want to know, you don't take it. If it doesn't say what you think about it, you don't take it. In either case, it is the community that makes the newspaper, and not the editor.

Now, the newspapers may be very bad. I have heard so many people say so that I begin to believe it myself ; but, good or bad, they are precisely what the community which supports them makes them. You breathe into them the breath of life. If they don't give you the news you want you take some other newspaper. If they don't say what you think about the news, you take some other newspaper. If they pry into the private business of this or that citizen—and I have been told that they sometimes do [laughter]—it is because a man's neighbor wants to know about it, as much as he wants to conceal it, and it is a curious fact that a man's neighbors, when they come to vote against him, are always in a majority. The newspaper obeys the majority ; so I beg you, whenever next you wish to censure any one of the newspapers of this city—and I dare say that nearly all of them deserve some censure—in fact. I can think at this moment of but one that I would want to except [laughter and applause] ; whenever you wish to level your censures against any of them hereafter, remember that the arrow which is aimed at them must first pierce yourselves. But, Mr. Chairman, we are not here to celebrate the press. The press celebrates itself. It does it daily and it generally makes a lively enough Fourth of July racket of it. We are here to celebrate the centenary of the General Society of Mechanics and Tradesmen of New York. I like that name. It smacks of the good old times when men really knew what lay at the foundation of the prosperity of cities and great communities. It is a good thing that this company, so largely representing the employers of New York, should still be proud to

describe themselves as mechanics and tradesmen. It is a better thing, as the Chairman has told us this evening, that this description is warranted by the facts; that at the head of so many employing firms in this city are so many employers who came up from the ranks, who first served and who are therefore enabled to command. [Applause.]

THE RELATIONS BETWEEN EMPLOYERS AND EMPLOYED.

Now, Mr. Chairman, employers are not always having a very good time in these days. The papers are full of the warfare between the employers and the employed, between labor and capital, and our garrulous friends, the politicians, who have many words for every subject, have skated all around this with a zeal that has particularly charmed me this evening, for neither the Senator from Connecticut, nor the president of the New York Central, nor my honored Congressional friend here, has had aught to say about the demands of labor upon capital. It is a ticklish subject; and yet, Mr. Chairman, it seems to me that in the turbulent contention between these two opposing forces we might get on a little better if we were all better entitled to the description which you give of yourselves as mechanics and tradesmen—if we knew both sides; if, having come up from the ranks, we could tell what the view of the ranks about the question is, as well as what the view of the employers may be. We can do no better thing than to try to place ourselves on the other side and to view the question of this struggle between labor and capital not only from the point of view of the employer, but also from the point of view of the men he employs.

If we should do that, we might, I dare say, find a state of affairs very different from that which prevailed a hundred years ago when this Society was organized. The most lamentable fact, as it seems to me, in the condition of labor at this time is the idea, prevalent, as I am assured, among laborers themselves, that competition has so increased, that the power of capital has become so overshadowing, that there is no longer much chance in this country for the laborer to become anything but a day-laborer. If that be true, if men who work with their hands and achieve the beautiful results in the mechanical arts we all admire in this city, have settled into the conviction that they have no chance in this country to get out of their present condition, then we are indeed in a bad way nationally.

“Ill fares the land to hastening ills a prey—
Where wealth accumulates and men decay.”

Surely, you could have no sadder decadence of men than when you take the heart out of them, or when you take the ambition out of them, and teach the mechanic that, good or bad, industrious or idle, he must remain only a hired machine to the end of his days.

THE PRIZES OF LIFE, STILL, AS OF OLD, OPEN TO THE LABORER IN THESE UNITED STATES.

Mr. Chairman, I don't believe that to be the condition of the mechanic and the mechanic arts of this country at this time. I believe we can do no better thing now than to convince the laboring men that it is not true that they must remain forever in the ranks of the day-laborers; and I honor this Society because it holds the good old name of Mechanics and Tradesmen; because it shows the men it employs that it is proud, that its members are proud of the origin they claim, and that there is only a step between the employed and the employer—a step which in this free country is still open to any man who proves himself fit to take it. [Loud applause.]

It is not true that there is no longer a chance to rise from the ranks. I believe that there may still come from the compositor's case a Horace Greeley. We know

that there has come from the ranks of the common ship-carpenters a great ship builder, like our friend here, William H. Webb [loud applause]; as there came from the common moulders in an iron furnace, a ship builder like John Roach. [Renewed applause.]

Mr. Chairman, I have already occupied more time than I intended; and there remains nothing for me to say excepting to repeat my belief that this Society will do its best work if it continues to create the impression and to prove by its acts, that between the employer and the employed there still exists that community of feeling and interest, which arises from a thorough understanding of each other's situations and wants. Let us learn that labor and capital are not antagonistic. Let us at least learn—and this seems to me to be the real secret, if any secret there be, to the present labor problem—that it is better to coöperate than to antagonize; and finally, in the last resort, it is better to arbitrate than to fight. [Loud applause.]

“JUDGE BRADY THE LAST SPEAKER.

The last toast of the evening, “Woman,” was responded to by Judge John R. Brady. His speech was interspersed with numerous puns and anecdotes, which provoked roars of laughter. In opening and closing his felicitous remarks, he observed:

My friend, General Woodford, informed me that he only consented to come here to-night when it was solemnly agreed to by the Committee that he would not be called on for a speech, but since he has seen so much feminine beauty represented here he says that he never wanted to make a speech so much in all his life. I was given my choice of three subjects to speak upon, “Education,” “Benevolence,” and “Woman,” and, of course, I selected the last. I did so because it seems to me that to speak about woman one must necessarily include the other two. A woman is good by nature, and she invariably seeks to make herself better by education and culture, while she is the personification of benevolence and never exhibits this superb virtue more markedly than when she throws herself away upon some unworthy fellow who never can thoroughly appreciate her qualities.”

A pleasant memento of the occasion follows on the next page of the pamphlet, in a diagram of the tables, with the names of all the guests as seated at them, a list of the Toasts, and a copy of the Menu card.

The following day, November 17th, the building, handsomely decorated, was thrown open for inspection by the public, and, in the evening, the concluding ceremonies were held in Steinway Hall; which was thronged with the members and their friends to listen to the oration by General Woodford.

Mr. John H. Waydell, the President of the Society, called the meeting to order at eight o'clock, and introduced the orator with the following words:

“PRESIDENT WAYDELL'S SPEECH.

Ladies and Gentlemen:—One hundred years ago to-night, and no doubt at this very hour, a sturdy band of mechanics came together in the dim candle-light of that period, and founded this Society.

To celebrate that event this large audience has assembled in this brilliantly lighted hall to listen to the eloquent address which our friend has kindly consented to deliver. And while congratulating each other upon the good work of the century, let us pause to honor the memory of those who have gone before us; whose purity and zeal has placed this Society the peer of any organization in the city.

Let me say to those who mingle with us to-night, perhaps for the first time, that our great object and aim is to relieve our unfortunate members and their families, and to provide for elevating the condition of the operatives of this great city.

For ourselves, we claim to be only plain mechanics and tradesmen, little gifted in speech, but with an honest desire to do the the most practical good we can with the means at our disposal, and I cordially invite you to visit our "Mechanics' Hall," No. 18 East Sixteenth Street, and there see for yourselves the importance of the library, the school and other branches of our work.

It affords me great pleasure to publicly express to the orator, our appreciation of his cheerful response to our invitation, and I now have the honor of introducing him to you.

Ladies and gentlemen, the Hon. Stewart L. Woodford will now address you.

The fact that the "admirable address" was extempore, and insufficiently reported, is recorded and regretted; as the report given is inadequate.

A few sentences follow :

WHAT ONE HUNDRED YEARS HAVE WROUGHT.

* * * "Standing in this presence, my memory goes back over these hundred years of history ; a hundred years which is as nothing in the lives of London, Rome or Jerusalem, and yet in New York it measures the sum of all its growth. When that party of twenty-two met in a tavern in Pine Street, to form this Society, there were only 24,000 people in the city, which was bounded on the north by Fulton Street, while there were farms on the Bowery and family manors along West Street. Not in mere physical growth has there been the greatest progress, but in mechanical developments. The multiplication of mechanism has become so great that we barely realize its extent. There have been great cities, but none so built as this; there have been great buildings, but none so erected. Our handmaidens to-day wear more embroidery than the ladies of Elizabeth's court. As I came here to-night there stretched over my head, like the unfleshed nerves of the world, the telegraph wires bearing the hopes and prayers and messages not only of this city and country, but of the multitudes of the earth. All around me like the moonlight fell that strange electric brilliancy, and I thought how every lineman and operator knew more about electricity than Benjamin Franklin and Faraday.

The average man, then, knows more than he did a hundred years ago. Is he happier? The answer as far as the primary needs of life are concerned is simple. There never was a time when so many men and women were as well fed and clothed and housed as to-day." * * *

I can look back over your one hundred years of history and see the cross and the flags of Christian nations flaunting over the slave-ship; I can see drunkenness tolerated in society, and war regarded as the whole duty of man. Now even war is giving place to arbitration.

THE NEED THAT ORGANIZED LABOR RESPECT THE RIGHTS OF OTHERS WHILE DEMANDING ITS OWN.

But the question comes home again, what is the effect of all this on the laboring man? And that question reaches its most perplexing form in the matter of unions and strikes. From my standpoint of an outsider I can see that unions have accomplished much, notably in asserting the power of manhood dormant in labor. I see also the evils when combined labor steps outside of law and justice; but unfortunately this is true of man in every condition, for popes and kings and governments have done the same. These evils will continue. Greed will teach the employers to

drive hard bargains, and ignorance and hunger will drive the laborer to defend himself by the first means at hand. The good sense of the world will make it all tend to lift humanity higher.

But organized labor must not continue to be tyrannical. It refuses to the young the opportunity of learning a trade, and it refuses the non-union man the right to work. All this is wrong, and hurts labor more than it hurts society, and when combined labor learns to be just, it will be emancipated from its present slavery.

* * * * *

The changes and progress of this capital have, truly, since 1785, been very great, but they are as nothing to the changes and progress that will probably be made even in a single generation to come.

* * * * *

In conclusion, the orator said of the future: Industry, frugality and good sense shall be the royal opening to that millennial time, as they are the only stepping-stones for us weary and working men in this work-day world of ours.

At the conclusion of Gen. Woodford's instructive and eloquent address, which was appreciatively applauded throughout, on motion, a vote of thanks to the speaker was unanimously ordered, and the Chairman declared the meeting adjourned."

Several letters of regret from General Hancock, Governor Hill, and others, are printed. At the regular meeting of the Society in December, the Committee in charge, made a succinct report, reciting the facts of the Banquet, participated in by 240 persons;—giving the list of invited guests; and especially commending the address by General Woodford, to whom a vote of thanks were given; thanks were also voted to the Committee. The following sentence is taken from this report:

"The Committee feel that among the important results of the successful celebration on the 16th inst. was the information to the public as to the character, service and usefulness of the Society so generously and courteously given by the press of this and other cities."

An Appendix, contains a historical sketch of the Society, by Stephen M. Wright, Secretary, from which the following extracts are taken:

"At the close of the war of the Revolution the people of the city at once began the task of recuperation from the evil effects of a seven years' occupancy of it by foreign troops; but desolation appeared upon every hand. They found its buildings had been destroyed by fire, its churches desecrated, its treasury empty, its industries annihilated, and no employment for those willing to work; its people estranged from each other in political opinions engendered by the issues of the war.

This condition of affairs all tended to a period of depression and embarrassment, in the midst of which the mechanics conceived the idea that by a fraternity of fellowship the burdens of the day could best be borne, and for that purpose a meeting was held on the 17th of November, 1785, at Walter Heyer's tavern, in King (now Pine) Street, near Broadway. It must be borne in mind that at that period the City Government, released from British rule, had been in active operation but two years; the entire population was but 23,614 persons, and its limits did not extend much above Partition (now Fulton) Street.

Twenty-two persons were present at the meeting, and a General Committee of Mechanics was formed, with Robert Boyd * as its chairman, to be composed of rep-

* Robert Boyd was Sheriff of the County 1787 to 1791, and Member of Assembly 1796.

representative delegates elected by the several trades having separate organizations, which were to be considered branches of the General Committee, the committee designating the delegates for trades not organized. The object of the organization thus formed was to promote and encourage the mechanic interests of the city, as well as to accumulate a fund for the relief of its indigent members, their widows, or orphans; for the latter purpose an initiation fee of sixteen shillings sterling was paid by each member, and a monthly sum thereafter. In 1788, friendly relations and a close mutual union was formed with a kindred body then existing under the name of the Manufacturing Society, by a joint committee of conference, composed of one-half from each, which continued for four years, when the Manufacturing Society gave up its distinctive organization, and many of the members joined with the Mechanics, the name then being changed to its present title, "The General Society of Mechanics and Tradesmen of the City of New York," under which it was incorporated for charitable purposes by the charter passed by the Legislature, March 14, 1792, which has since been extended and amended as circumstances required. The incorporators in this charter were men also actively and honorably identified with the early progress of the city. The granting of this charter by the Legislature was the cause of congratulations being received from various societies in different cities of the Union, so unusual was the occurrence.

The original idea of representative membership at this time was abandoned, and any mechanic or tradesman vouched for honesty, industry and sobriety," was eligible to membership. This change at once had a beneficial influence on the prosperity of the Society, as the accessions to membership in that year alone, were nearly two hundred and fifty persons.

The minutes of the Society are full and complete from the very commencement of the organization to the present time, and are well preserved, filling several large volumes, showing many remarkable specimens of old-fashioned caligraphy and orthography." * * *

The other topics next treated are "The first Mechanics' Hall," "The Mechanics' Bank Started," (in 1810.) "Its Benevolence," The three topics which followed these, are copied here in full.

THE SCHOOL.

The income of the Society having become sufficient, the Legislature, by act passed January 26th, 1821, authorized the appropriation of a portion of its funds for the establishment of a school and an apprentices' library. Up to this period its use had been restricted to benevolent purposes only. In May, 1821, a lease for sixty years was obtained from the city for the plot of ground 10, 12, 14, Chambers Street, at a fee of \$1,000, and the yearly rental of \$125. A building, which is still standing with the Hammer and Hand upon its front, was erected at a cost of \$7,542, the corner stone of which was laid on the 18th of June with appropriate ceremonies, the members and distinguished citizens participating; and on the 26th of November of the same year it was dedicated with suitable exercises as the "Mechanics' Institution." The address on this occasion was delivered by Mordecai M. Noah, Esq. The school and library, both of which had commenced about a year previous in rooms hired at the corner of Tryon Row and Chatham Street, were moved to this building. The Mechanics' School thus instituted was intended for the gratuitous education of the children of indigent or deceased members only, but soon grew in such favor that, upon application, other children were admitted upon the payment of a moderate sum for tuition; but no distinction existed between the two classes of scholars, and every effort was made that one should not know of the other. It was successfully continued until the increasing merits of the public free schools rendered it no longer necessary, and in December, 1858, it was discontinued. During the

thirty-eight years of its existence, owing to the number of paying scholars, it was, to a great extent, self-supporting; and so high was its course of instruction, including its classical department, that its graduates were in demand as teachers for other schools. Both the University of New York, and Columbia College, extended the privilege of their free scholarships to it, and Prof. Anthon, Rector of the Columbia Grammar School, offered to have six of its graduates in a course of preparation in his school, free of charge for tuition, that they might avail themselves of the scholarships offered.

As early as 1822, some attention was paid by the Society to instructing in the English branches the apprentices employed by its members, and for some time Charles Starr, a member, thus gratuitously taught a class, exhibiting the interesting spectacle of literature mingling with labor, and a master mechanic and apprentices devoting their evenings to literary improvement. These classes were continued with varied success until January, 1859, when the present Free Evening School was established by the Society; to enable those engaged in daily occupation to acquire gratuitous tuition in free-hand drawing, mechanical and architectural drafting, and designing from objects of art. And, last year, a class in modeling was introduced under the personal supervision of James Morrison, a member of the Society. The sessions of this school are held four evenings a week for a term of seven months. Competent teachers are employed, and the interest manifested by the scholars demonstrates that there is a class of workers in our midst ambitious for self-improvement; and the fact that more than twice the number of applications were received during the last session than could be accommodated, proves how vast is the field, and that this work of the Society is only limited by its ability to meet the demands.

THE LIBRARY.

The Apprentices' Library, opened in conjunction with the school in 1820, with a nucleus of less than four hundred volumes, has gone on continuously increasing in usefulness, supplying free and edifying reading matter to the laboring classes of this city, and the Society is justly proud of its now well-managed library of nearly seventy thousand volumes. It is no longer in any sense an apprentices' library only, but is practically a free library to all persons who are really entitled to the gratuitous use of books; the only qualification insisted upon being that the applicant shall be employed in some legitimate business. With females there are no restrictions as to age, or kind of employment, nor with males under the age of eighteen. After that age it is required that they must be engaged in some mechanical pursuit. With such liberal provisions scarcely any are excluded but those presumably able to pay for their reading, and even these are excluded only because the income of the Society compels it to limit its benefits to the means at its disposal. When first established it was opened in the evening only, the books being received and delivered by a member, but in 1854 a librarian was employed and it has ever since been opened daily, from 8 A. M. to 9 P. M., except Sundays and holidays.

In January, 1856, a public reading-room was added, free to all, without any restrictions whatever, fully supplied with the daily and weekly papers, and the popular periodicals and magazines; to this is also attached a library of reference, containing over five thousand volumes. The committee in charge exercises great care and discretion in the selection of books, admitting nothing at all objectionable in its character, yet endeavoring to furnish its numerous readers with literature suitable for all ages, occupations and tastes.

In 1842, through the efforts of ex-President Thomas R. Mercien, the New-York Mechanic and Scientific Institution—its charter, granted in 1822, having expired—transferred its funds, amounting to \$1,086, to this Society, which formed the nucleus of the present collection. In 1845 ex-President Benjamin

Demitt, whose name is associated with many generous acts of philanthropy, bequeathed his entire library of nearly two thousand volumes to the Society, which was further increased, five years later, by the means of a bequest of \$12,000, from his sisters, Elizabeth and Sarah Demitt; and in 1868, Peter Lorillard, another member, bequeathed \$5,000 for the benefit of the library. Ex-Mayor Jacob A. Westervelt, William H. Webb, Richard Poillon, Cornelius H. Delamater, and others, members of the Society, have also, from time to time, made valuable donations of models and pictures of celebrated vessels of their construction, which add greatly to the attractiveness of the library and reading-room. Mr. William Wood (the Mercantile Library is indebted to him also, for his patronage) of Canandaigua, N. Y., an esteemed philanthropist, who died in 1857, manifested great interest and rendered valuable assistance in the early days of the library, and, although not a member, it is indebted to him for many valuable donations of books. His portrait, painted in 1820 by one of the early beneficiaries of the library, now hangs in Mechanics' Hall.

THE LECTURES.

By an act of the Legislature, passed February 18th, 1833, the Society was authorized to still further increase its usefulness by reserving a portion of its income for the purpose of "promoting and disseminating literary and scientific knowledge." This, it was determined, could best be done by means of a course of lectures, for which purpose a commodious lecture-room was built, as an extension to the school building, at a cost of \$9,845, and in January, 1837, the first lecture was delivered in the new room, by Prof. Renwick, on "Natural Philosophy," followed by Dr. Harvey, on "American Literature," and Dr. Spring, on the "Importance of Industrious Habits to Young Men." So acceptable were these to the members, and the attendance so satisfactory, that the course was continued, and a series has been arranged for each Winter since, which has been a permanent source of instruction and amusement to the members, their families and friends. Laterly these lectures have been delivered in Steinway Hall, and as none but the best lecturers are engaged, the attendance has been exceedingly large."

Then, follows an account of the moving from Chambers Street, to a large building in Crosby Street. The next topic, is: "Its Patriotism." It has been its custom for many years, to formally celebrate the "glorious Fourth," and it has generally participated in public civic celebrations. The Society presented a stand of colors to the First N. Y. Volunteer Engineer Regiment, (Col. Serrell commanding), composed exclusively of mechanics.

"At the meeting of the Society, in April, 1865, it unanimously adopted and published an address to the Army and Navy of the United States, thanking them for 'their patience and endurance during the long struggle they have been engaged in to subdue the greatest rebellion the world has ever known,' and with them 'rejoiced over the victories they have achieved on land and sea,' and "tendered their sympathies to the many families in the land who have been bereaved by the loss of some of its members while fighting for the Union." The privilege and use of the library and reading-room were tendered to wounded soldiers and sailors.

THE PRESENT MECHANICS' HALL.

The need of a more eligible hall for the use of the Society had been apparent for a number of years, and such was secured in June, 1877, by the purchase of the Robinson Hall property, formerly the Snyder mansion, at 18 East Sixteenth Street, for \$55,500. After necessary alterations, repairs, and furnishing, costing \$22,636,

the library, school, reading-rooms, and its business offices were removed from the Broadway and Crosby Street buildings, which were leased for business purposes.

The new hall, covering the entire lot ($37\frac{1}{2} \times 181$) was dedicated with appropriate exercises on January 22d, 1878. The addresses were delivered by President Henry L. Slote, Chief Justice Daly, Gen. Charles Roome, and other members, followed by a public reception, with music and collation. From the remarks of one of the officers we quote: "No member of the Society can fail to derive pleasure from the thought of its present eligible domicile, but while we possess and enjoy it, let us reverence the memory of those who have gone before us, whose active zeal and purity were the primary cause of placing the Society where it now stands, in the front rank of the institutions of benevolence and usefulness in this metropolis."

In the hall are many valuable relics of a by-gone age; the portraits of the founders of the Society; the original flag first displayed in 1795; the old banner behind which the members have proudly marched in former years; furniture and engravings nearly a century old, and many other mementos of the past, the most valuable of which are the carefully preserved written records.

ITS PROGRESS.

The career of this Society from its commencement has been one of continued activity, prosperity and success; its field of usefulness extending as its means increased, yet with a record of honest devotion to its primary object of which it is justly proud; and to-day it enjoys the gratification of having a yearly income of nearly \$40,000, which it expends entirely for benevolent and educational purposes, and as it has now completed a century of active labor of inestimable value to the operatives of this city, it hopes—while keeping steadily in view its original aim—that it may yet, by judicious management, so increase its beneficence, as to be of some assistance in elevating the condition of every respectable artificer in this metropolis. To that end it consecrates itself with renewed vigor, finding its recompense in the assurance of the blessings thus to be bestowed."

This historical account properly closes with the list of the Centennial Committee; to whose efforts the success of this most interesting celebration was due.

Centennial Committee.—Wm. H. Gedney, Douglas Taylor, Robert Rutter, Jno. H. Rogers, Samuel A. Briggs, Wm. Otis Munroe, David Jardine, Jno. H. Waydell, Gilbert J. Burnet, Charles T. Galloway, Stephen M. Wright, Geo. H. Robinson, Jno. R. Voorhis.

Banquet Committee.—Douglas Taylor, Gilbert J. Burnet, Robert Rutter.

Invitation Committee.—Samuel A. Briggs, Wm. Otis Munroe, Stephen M. Wright.

Publication Committee.—Charles T. Galloway, Douglas Taylor, Robert Rutter, Stephen M. Wright, Samuel A. Briggs."

The next annual report, for the year ending December 31, 1885, bears the notable title of "One Hundredth Annual Report." The report of the School Committee will be found in the account of the school which follows.

The Library Committee, congratulate themselves on this centennial of the Society, and the sixty-fifth year from the opening of the Library; that,

"From very small beginnings we are now accredited with being on equal footing with any circulating library in the city, a fact which should gladden the heart of every member of our Society."

They note a large decrease in the number of readers during the past year and in the number of works of fiction drawn, as evidence that they are discouraging that class of readers; and that a better class are making better use of the more valuable books of the library. They, also, announce the beginning "of a Museum of old and rare books, medals, etc.," for which they ask contributions of such articles.

The society, also, issue under the same date 1886, a Manual,* containing copies of the Charters, By-Laws, lists of members, etc.

The original Charter of 1792 is given. That expired by its own limitation in 1812. The present Charter passed April 3rd, 1811, is given, with its amendments and acts relating to the society in 1821-1833-1842-1856-1860-1872-1881, as, by the growth of the society, new needs were developed. The present By-Laws were adopted July 7th, 1886. The long list of officers through the century, and a similar list of members, alphabetically arranged, follows.

In the report for 1886, the President, Mr. Gilbert J. Burnet, in his inaugural address congratulates the society on their action in making the library absolutely free; while the Library Committee report as a direct result of this change, "that the circulation has increased 81,410 reaching at the close of the year, 231,404 volumes; this being, with but few exceptions, the largest circulation of any free library in the United States." A very interesting table is given of the statistics of the number, and classes of books, drawn from the library during each month of the year. The grand total for the year, shows 41,525 in twenty classes; including scientific, historical, artistic, literary, religious books, and books of travel and biographies; and 189,879 volumes of Fiction and Juvenile Literature. The number of accounts opened for drawing books is 5060. There are nearly 71,000 volumes in the library. Lists of donors of books and of their gifts are given. Nearly 50,000 persons made use of the reading room during the year.

The "Resources" of the Society, real estate, securities, library, etc., are given as \$685,657.01. The running expenses for the coming year are estimated at 33,270 as against 34,500 of receipts. The whole making a most enviable showing of the usefulness, activity and wealth of the Society.

The school committees' report for this year will be found in the account of the schools which follow.

In the report for the year ending December 31st 1887, the inaugural address of the President, Mr. William C. Smith, delivered at the annual meeting of the Society, on January 10th, 1888, is given. In this address, the President considers at some length the present situation and the coming needs of the society; led thereto, by the

* "Manual of the General Society of Mechanics and Tradesmen of the City of New York. 1886. Mechanics' Hall, 18 East Sixteenth Street, New York. Pp. 108."

fact that the present Charter expires on "the first Monday in April 1890." He suggests that an act making the Charter perpetual, or at least extending it for a long time, be applied for, to the Legislature by a committee to be appointed; and that the question as to what changes may be desirable be very thoroughly discussed and considered.

The limitation as to amount of real estate which the society is allowed to hold; the limitation of the Library fund to \$10,000;—and the questions of manner of admission and amount of initiation fee; are topics he suggests for consideration. He then points out the fact that as the City grows, the demands on the several branches of the work of the Society increase; so that the question of the future finances of the Society is a very pressing one. He asks: where shall we retrench in our present expenses?

"In our Pensions? No. "To relieve the unfortunate, the widow, and the orphan, were the primary and commendable objects of the founders of this Association." Whatever happens, we cannot and must not turn away a single needy and worthy applicant to our Pension Committee.

In our School we are turning away applicants far exceeding in number those that we are able to accommodate, and in both departments it is doing work not only for the Society to be proud of, but work of inestimable value to our scholars and through them to our Commonwealth—surely we cannot retrench there—but, brethren, we must call a halt, and see that we do not increase its expenses until such time as our income will have materially increased.

We are not a money-making institution, our present resources are the result of slow and sure accumulation of years of careful and prudent economy; and, brethren, however pleasant it is for us, you and I of to-day, to give, and give bounteously, yet if we wish to profit by the example of our fathers, and bequeath to our children of this great Society in proportion as we have received from those before us, then we must give intelligently and with such wise discretion, that in the future our successors shall have from us a sufficient store to give with that prodigality that will be expected from those who have received so much."

He, also, calls attention to the fact that the result of throwing the library open to all, necessitates the more rapid wear and deterioration of the books. The report of the Librarian shows an increase over the previous year of nearly six thousand persons who now take books; the total number now being 13,145 as against 5,630 last year, while the increase in number of volumes loaned amounts to nearly 50,000 volumes. He urges the value of the annual lecture courses, and suggests that greater use be made of the opportunities for social intercourse afforded by the Society.

The Report of the School Committee for this year will be found with those of the previous years, in the account of the schools which follows:

In his inaugural address, delivered January 9th 1889, and printed in the 163rd Annual Report of the Society, for the year 1888, the new President, Mr. Robert Rutter, thus epitomizes the condition and

recites the work of the various departments of the Society for the year preceding. He says :

* * * “Any attempt by words of mine to add to a century’s brilliant history of this Society would be futile. Its history is already written not alone in words, but in indelible acts of love, kindness, and benevolence, as its schools, reading rooms and library,—all free to the public,—have identified it with, and placed it among, the most useful institutions of the great city of New York, and it is a source of gratification to know that it stands to-day on a firm, solid, financial foundation.

Its assets of nearly three-quarters of a million of dollars are judiciously invested and zealously guarded by a careful and discriminating committee in connection with an eminently well-qualified official as treasurer, and it may be truly said that the general condition of the Society was never better than to-day, and all of its several departments are harmoniously working together, judiciously expending their appropriation for the greatest good.

The minutes of the Society and other official acts are recorded in a clear and concise manner by an officer possessing peculiar fitness for the position which he occupies.

The needs of the indigent member or the widow have been tenderly and wisely looked after by a committee who, while careful of the means at their disposal, yet are not parsimonious toward the recipients of its bounty.

It may be said with pride and gratification that the results of the school work show more satisfactory and permanent effects for the money expended than ever before. The skill, judgment, and ability of the brothers in charge of that department, and their wisdom in gradually changing from what might be termed theoretical to practical teaching, now show themselves conspicuously and in a highly satisfactory manner to the Society and pupils.

If a free circulating library, properly managed and well supplied with good books, be a good institution for any community, surely the Apprentices’ Library is entitled to a full share of commendation and support, being, as it was till within the past few years, the only one of the kind in the city. Testimony to its good results comes from many prosperous business men, who attribute much of their success in life to the benefit derived from the use of the books procured from this institution in early life. No better incentive could be desired to warrant the Society in manifesting the deepest interest in the good that can be done in this department of its work. The earnest attention of the Library Committee to its duties has resulted in a much improved condition of this department, and it deserves commendation.”

After referring to the aid given to the library by the City authorities, acting under the provision of a recent law whose purpose he commends but of the permanence of which he is doubtful, he speaks of the success of the lecture course arranged by that Committee. He then considers the question of providing a new home for the Society; which already feels, in the pressure of the encroaching tide of business, the first indication that a more suitable home must soon be sought elsewhere. In his closing passages he thus refers to various recent important changes in the Charter and By-Laws. He says :

“In view of the encroachments of business and consequent increase of values in the vicinity of the present Mechanics’ Hall, an important question in the near future will be : How can we purchase land and erect a building that would be a home to the Society ?”

* * * * *
Our Society has grown from infancy to manhood ; and still, with its birth day way back to 1785, its old age is vigorous, its complexion fair and free from blemish,

its faculties unimpaired, its usefulness has kept progress with the advancement of ideas, its ability has retained a guarding influence upon its usefulness, and the record of to-day is a monument to the intentions and integrity of more than one hundred years ago.

From the meetings at the public house of Walter Heyer in 1785, to the hall at the corner of Broadway and Robinson Street (now Park Place) in 1802, then to Chambers Street in 1821, and then to Broadway and Crosby Street in 1832, and so on through the successive acquisitions of property, and the growth of influence and necessity for existence, until the present, the homes of the Society have been in accordance with the requirements of the work to be done and the standing of the Society in a social and financial estimation. It is an argument based on a proper estimation of that standing that the noble work now being done might be better accomplished in quarters more fully adapted to its purpose, and the tide which once ran at its flood for the Society seems to have passed its ebb and to have again begun to rise. To take it at its flood, to enlarge our quarters and place the Society in a home which shall be adequate for necessity, and by its location and beauty encourage the social and hospitable development of our association, would seem to be a matter worthy of immediate and earnest consideration, that the means may be adapted to the end, and the end accomplished without impairing the fulfillment of expectation in any channel of our appointed usefulness.

* * * * *

The good work of the Society is limited only by the means at its command; the field is large, the harvest is ripe for a much enlarged work in the direction of training our young men in the mechanic arts, or trades, so that the American born and educated class may maintain the balance of power, and bring about a spirit of friendly co-operation between employer and employee, and aid in allaying the bitter jealousies which too often exist among the working-classes.

It is a sad commentary on the so-called liberty of American citizenship that a sober, industrious, skilled mechanic should be forced to walk the streets of New York, boycotted by his own craft for maintaining his personal independence.

The amendment to the charter passed by the last legislature made our Society perpetual, and in many ways added strength to the fundamental law by which it is governed.

Among the radical changes made in the By-laws recently adopted is the increase of the initiation fee to one hundred dollars. While heartily approving this change, it cannot be doubted that the effect upon increase of membership will be felt in the near future. And this may be counteracted by judicious and earnest exertion among the members to select and secure for the Society such as will add to its strength and give wisdom to its counsels.

While the addition to our membership during the past year has been exceptionally large, we cannot but realize and humbly submit to the wisdom of Divine Providence in the removal of many of our esteemed brethren, whose presence was always pleasant and their judgment sound.

You are aware that the 30th of April, 1889, is the centennial of the inauguration of George Washington, the first President of the United States. As that imposing ceremony took place in this city, it is proposed by our fellow-citizens to celebrate that important event in a becoming manner. You have been invited to participate in the ceremonies on that occasion, and some of the brothers form a part of a general committee in connection with that celebration. As one of the oldest organizations, and yet most modest of New York societies, you will no doubt have a conspicuous part in whatever shape the celebration may assume. It would seem proper to suggest that the committee meet from time to time and agitate the subject, so that when the time arrives the Society may be in a position to honor the event and itself, by the part it may take in such a notable celebration.

Finally, brothers, I realize that I enter upon the duties of the office with which you have honored me without the benefit of scholastic education. The bookstore has been my classroom, the tome my tutor, the work of the mechanic my occupation. I am scarcely familiar with parliamentary law, but shall endeavor to do my duty faithfully, impartially, and to the best of my ability, trusting when right to receive your cordial support, and, if in error, your kindly consideration and forbearance.

"Without these the greatest ability could not succeed; with these, the humblest faculties could not fail."

The statement of the Finance Committee gives in detail the resources of the Society, which are summed up in the paragraph already quoted from the President's address, as very nearly three quarters of a million of invested property. The income for the year 1888, amounted to \$58,584.98, with disbursements of \$45,439.34, leaving a cash balance of \$13,145.64.

The annual expenses of the Society the past few years seem to range from \$45,000 to \$60,000. The treasurer reports that the financial transactions for the year 1888, have only been exceeded in amount by those of 1883, when the Society purchased No. 239 Broadway; and that the year closes, with not a debt of any kind due by the Society, and with only the December installment of the city appropriation, due to it, and that this will undoubtedly be received in a few days.

The address by President Albert G. Bogert, delivered January 14th 1890, thus concisely testifies to the prosperity of the several departments of the Society. He says:

* * * "The detailed reports just presented by the Standing Committees exhibit an exceedingly satisfactory condition in the several departments of the Society's work, and certainly need no comment from me, for when published they will command the admiration of all who read them, as a noble example of unselfish devotion to the enlightenment and elevation of the operatives of this City, for which we may be justly proud."

Speaking more in detail, he comments on the decrease in application for membership, and questions the wisdom of the recent increase in the amount of the initiation fee; mentions the progress of the schools and the growing use made of the Library, with a word of caution as to the character of the books to be furnished. He thus refers to a recent step taken by the Society.

FREE SCHOLARSHIPS IN TRADE SCHOOLS.

"The free scholarships of the Society, recently established in the New-York Trades Schools, should receive the encouragement and support they justly deserve, for to us technical instruction is of the greatest importance, and demands our serious consideration, for by the careful and thorough tuition of bright lads in the various branches of our trades, we may be enabled to elevate the dignity of the Mechanic Arts from a simple "trade" to that of an honorable profession; for who will deny to us that title, when he considers the conception, the construction and

the completion of the magnificent public and private edifices in the City ; many of them, brothers, we can point to with just pride as the result of our own handiwork.

It was my privilege, with the other officers of the Society, to recently visit the Schools, and we were most cordially received by Mr. Richard T. Auchmuty ; every opportunity was afforded us to inspect the course of instruction in each of the departments, and the proficiency exhibited by the scholars was extremely gratifying to us all. In connection with the Schools, there has been recently erected a dormitory, where, at a very nominal sum, are provided cheerful and homelike accommodations for about fifty out of town scholars. For these bright, intelligent lads, anxious for knowledge, I ask that some arrangement be made to accord them the privileges of our Library, without the need of their coming to it individually, believing it to be at least one way whereby we can acknowledge our appreciation of Mr. Auchmuty's forethought in erecting this "Home" for his boys."

In his inaugural address, January 13th 1891, Mr. Oliver Barratt, the new president, thus recites the continuing prosperity of the Society in its varied activities :

* * * * *

The past year has been one of general prosperity in all the departments of the work of the Society. The finances are in a good condition, notwithstanding the large outlay for repairs, and improvements to our buildings. The Treasury shows a good balance on hand. The building and sinking fund have been largely increased and is all well invested. The pensioners of the Society have been well cared for and their wants fully supplied, and whenever it has been found that extra help was necessary, it has been cheerfully granted in all cases.

The library has shown a large increase in its usefulness, by the increased circulation over that of any previous year and by the demand for books of a higher standard, which demand has been met by the purchasing of a large number of such books. The schools of the Society have maintained their high standing, and rank second to none in the quality of the work done by them.

How well the literary and scientific branch or our work has been done, you have the opportunity of judging, and I think you will all bear me out in saying that it has been well done, and the entertainments given have contributed largely to our instruction and enjoyment. I think we have great cause for encouragement, and may feel that we are doing a good work, which will be far reaching in its effects. I think the cordial thanks of the Society are due to the officers and members of the several committees through whose labors so much good work has been done.

For the details of the work done by the different committees, I refer you to their reports and earnestly hope they will be carefully studied by you all, that you may see what the Society is doing.

* * * * *

The Pension Committee, report for the year ending December 31st, 1890, an expenditure of \$5,205. The School Committee, of \$4,584.87. The Library Committee, of \$13,119.50, with a total of 86,897 volumes; showing an increase during the year, of 4,143 volumes, of 509 readers, and a circulation for the year of 252,167 volumes. The classification of the books circulated, as kept by the Librarian, shows that nearly 200,000 volumes were classed under the head of "Fiction and Juvenile books," the residue of the total number were divided among twenty classes.

The following is a list of the General Officers and Committees for

GENERAL SOCIETY OF MECHANICS AND TRADESMEN OF THE CITY OF NEW YORK,
INSTITUTED 1785.

OFFICERS AND STANDING COMMITTEES FOR 1891.

President.—OLIVER BARRATT.*Vice-President.*—JOSEPH J. LITTLE.*Second Vice-President.*—GUY CULGIN.*Treasurer.*—RICHARD T. DAVIES.*Secretary.*—STEPHEN M. WRIGHT.*Finance Committee.*—Peter T. O'Brien, Chairman, William J. Van Arsdale, Secretary, John Banta, William C. Smith, William A. Hoe. President, 2d Vice-President and Treasurer, *ex-officio*.

[Meet on the last Thursday evening in each month.]

Pension Committee.—William Stoneback, Chairman, David W. Ball, Secretary, Thomas Keppel, Oliver A. Farrin, Andrew Hutton, Charles W. Potter, Horace Metcalf, Abraham A. Andruss, Alfred B. Price, William H. Hand, William C. Parker, Benjamin Hicks. President and Vice-President, *ex-officio*.

[Meet on the third Tuesday in each month, at 2 P. M.]

Pensions paid on the 15th day of February, May, August and November, at 2 P. M.

School Committee.—Henry Moore, Chairman, John E. Nicholson, Secretary, John G. Bogert, Francis W. Doane, James Morrison, John G. Shaw, Alfred G. Nason, James W. Wilson, Jacob S. Browne, Jacob A. Felter, Elijah P. Leonard, Carlton W. Nason. President and 2d Vice-President, *ex-officio*.

[Meet on the last Wednesday evening in each month.]

Library Committee.—Warren A. Conover, Chairman, William H. Burras, Secretary, William K. O'Brien, Henry W. Redfield, Henry Bessey, Robert Christie, Peter De Baun, Charles E. Bogert, Jacob V. Myers, John N. Richardson, Charles C. Alexander, Charles J. Gillis. President and Vice-President, *ex-officio*.

[Meet on the last Friday evening in each month.]

Literary and Scientific Committee.—Samuel A. Briggs, Chairman, John M. Mossman, Secretary, Frank E. Conover, Douglas Taylor, Thomas J. Fitch, George T. Dollinger, William R. Bowne, William G. Slade, Stevenson Taylor, William R. Worrall, Thomas J. Drummond, Joseph A. MacDonald. The President, *ex-officio*.

[Meet on the third Monday evening in January, February, March, April, May, September, October and November, and last Monday evening in December.]

Building and Sinking Fund Committee.—Richard A. Storrs, Chairman, Edward Gridley, Secretary, William H. Wehh, Geo. A. Jeremiah. The President and Treasurer, *ex-officio*.

[Meet on the last Thursday in March, June, September and December, at 3 P. M.]

Auditing Committee.—Edwin F. Galloway, Chairman, Lewis W. Harrington, Secretary, Thomas F. Ryder. The President, *ex-officio*.

[Meet at the call of the Chairman.]

Inspectors of Election.—Samuel I. Acken, Erskine Van Houten, John C. Doremus.*Door-Keeper.*—Lewis Katzen.

THE FREE EVENING DRAWING SCHOOLS OF THE GENERAL SOCIETY OF MECHANICS AND TRADESMEN OF THE CITY OF NEW YORK.

In the preceding historical summary of the Society, the closing of the schools, by reason of the fact that the public schools had begun to supply that need, is noted.

The evening classes under the direction of the Society were, however, kept up; but instruction in elementary drawing and in book-keeping, the classes of instruction of special value to apprentices, were substituted in place of the elementary English studies.

This was in the winter of 1858-'59, and the free evening drawing classes, open the first four evenings of each week from September to March, have been continued ever since. The book-keeping classes were discontinued in 1880.

The classes were attended, at first, by men only, but about 1874, a class for girls was opened, and is still continued.

The classes are held in the basement rooms underlying the whole building. The main room is spacious and the arrangements of desks and lights, are such as to accommodate the largest possible number. The want of light precludes day classes nor, indeed, are most of the persons for whom the drawing classes are specially designed able to attend during the day.

These classes resemble the men's night classes of Cooper Union, or those of the Maryland Institute;—though there seems to be less grading of studies and little attempt to give a consecutive course. Mechanical, Architectural, and Free Hand Drawing, are taught.

The ladies classes study mostly free hand and are encouraged in designing. As an annual exhibition is held of work by the students a larger development of free hand and design, and a gradual lifting up of the artistic standard of the classes may be anticipated.

The following extracts from Article X of the By-Laws of the Society*, show how the schools are directed and who may attend.

“THE SCHOOL COMMITTEE.

SEC. 1. It shall be the duty of the School Committee to take charge of, and to superintend the interests of the school; to judge the qualifications of, and to employ and discharge teachers or other persons therein engaged; to make rules and regulations for the admission of scholars and the government of the school, and to cause the school to be visited at each session by one or more members of the Committee.

SEC. 2. Members of the Society, minor children of members, or of deceased mem-

*The Charter and By-Laws of the General Society of Mechanics and Tradesmen

bers, apprentices, journeymen mechanics, artisans, females employed at any legitimate business, and unemployed persons under sixteen years of age, shall be entitled to the gratuitous privileges of the school, under such rules and regulations as may be established by the Committee, and approved by the Society."

The By-Laws of the Committee require each member to visit the school once each week during the session.

The Committee issue circulars to employers each autumn, stating that—

"These classes being specially intended for the benefit of industrious and deserving apprentice Boys and Mechanics, we respectfully request you to notify any such in your employ, who may wish to avail themselves of this opportunity of useful instruction."

and giving notice that they will attend at the Hall four stated evenings, for enrolling and classifying scholars.

The following is the report of the School Committee of the classes in 1882.

"Annual Report of the School Committee for 1882.

Cash received during the year from the sale of drawing material, and paid to the Treasurer of the Society.....	\$324. 67
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Drafts on the Treasurer of the Society :

For salaries.....	\$2,584. 00
For Supplies for School.....	478. 48
For Fixtures and Repairs.....	54. 43
For expenses of closing Exhibition.....	94. 00

\$3,210. 91

Your School Committee take pleasure in reporting the condition of the School as prosperous and satisfactory in every branch. For many years the average attendance has not been as high as at present, and by a careful discrimination of the numerous applicants, the benefits of the School are conferred almost exclusively on persons learning a useful trade. The deportment, application and progress of the scholars are satisfactory proofs of the earnest efforts of our superintendent and teachers, who have, without exception, applied conscientiously to their respective duties.

A removal of the partitions formerly dividing the classes has been found to improve ventilation and add materially to the comfort of the scholars and teachers.

A careful system of purchasing supplies has enabled us to replace economically many of the old and worn copies with superior and modern studies better adapted to our wants.

Our limited accommodations compel us to refuse many deserving applicants for instruction in our school, but we cherish the hope that at a future day we shall, with the generous help and fostering care of our Society, be enabled to extend the usefulness of this branch of our institution in a manner worthy of the memory of its founders.

Respectfully submitted.

A. O. ROWE,
Chairman,

A. MEYERS,
Secretary."

The schools are in charge of a general superintendent, eight teachers and a "supply clerk." The teachers, are practical draftsmen, engaged in their avocations during the day, either as employers or employees—so the instruction is eminently practical and given by those thoroughly familiar with the needs and customs of the shop.

In the autumn of 1883, there were between 250 and 260 pupils in attendance, 50 of whom were girls. The classes hold from 7 to 9 P. M.

About 60 per cent of the scholars are engaged in mechanical trades, 20 per cent are clerks, the rest who are younger are in no occupation; the ages range from 14 to 40 years. About 50 per cent are new scholars each year. There is no regular course of study with graduation, but certificates are awarded.

"SCHOOL COMMITTEE FOR 1883-'84.

Anthony O. Rowe, *Chairman*,
William C. Smith, *Treasurer*,
Joseph E. MacFarland, *Secretary*,
F. C. Tucker,
Elijah P. Leonard,
John G. Bogert,
Charles E. Hume,

Thomas D. Stetson,
John L. Hamilton,
Richard Taylor,
Lewis Dunham,
Henry Moore,
Daniel Herbert,
President, ex officio."

The school sessions which are held on four evenings in the week, begin in October and close in March.

These classes, which are, as already stated, in some respects similar to those of the Cooper Union, have, perhaps, a more definite practical application to the pupils for whom they are designed and partake in a slight degree of the nature and purpose of the trade school; that is, they look directly to the better fitting of the young mechanic for the practice of his trade. The pupils are taught "Machinery, Mechanical and Architectural Drawing, also Modelling in Clay." This analogy holds good, also, in regard to the womens class, in that some definite result in the line of aiding their future employment is sought in the training given. This purpose is kept in view, and not merely general educational results, which will sufficiently explain changes in the studies taught. This appears in the report of the school committee for the year ending December 31st, 1883, which here follows:

"Annual Report of the School Committee for 1883.

Cash received during the year from the sale of drawing material, and paid to the Treasurer of the Society.....	\$403.48
<hr/>	
Drafts on the Treasurer of the Society:	
For Salaries	\$2,605.50
" Stationery for Committee	28.00
" Supplies for School	419.13
" Expenses of Closing Exercises.....	61.05
" Fixtures and Repairs.....	255.42
	<hr/>

The School Committee further report the School in a flourishing condition, with a large attendance of an excellent grade of students. The Architectural and Mechanical classes have largely increased in numbers, and the wish of the Committee is gratified at the enlargement of these classes, feeling it is more in the line of work of this Society to help those who are learning trades to become more useful to themselves. The Superintendent, in a late report to your Committee, suggested a plan of gradually carrying out further the aim of the Committee to reduce the Free Hand class still more, and put instead another Architectural class. There is still very little more to be said, as, with the means at the disposal of the Committee, they have done what they could to help onward and make an intelligent class of mechanics, who may be an honor to the Society, and themselves receive an abundant reward.

Respectfully submitted.

A. O. ROWE,
Chairman.

J. E. MACFARLAND,
Secretary.

In the report for the year ending December 31st 1884, the initial experiment of a class in modelling in clay is announced.

"Annual Report of the School Committee for 1884.

Cash received during the year from the sale of drawing materials and paid to the Treasurer of the Society	\$531.96
Drafts on the Treasurer of the Society:	
For Salaries	\$2,348.50
" Supplies for Schools	584.62
" Fixtures and Repairs	106.48
" Stationery for Committee.....	60.78
" Plate and Certificates	115.00
" Expenses of closing exhibition.....	64.26
Total.....	\$3,279.64

The School Committee in presenting the Annual Report of the receipts and disbursements of our free drawing classes, feel warranted in saying that as regards the number, character and regularity of attendance of the pupils, and their interest in their work, the school is in a most flourishing condition, and that in its sphere it is filling a want in our city which is not otherwise supplied, and is doing an excellent work in fitting those of our young mechanics, who are availing themselves of its benefits, to become more useful to themselves and more valuable to the community.

The Committee take pleasure in announcing that during the winter vacation they have arranged to make use of the store-room in the rear of the main school-room for a modeling class—this class during the balance of the present season will be an experiment; but the Committee believe that the result will show the advisability of continuing and enlarging it the coming season, even should it be necessary to curtail some of the other classes in order to do so.

We feel also that it is but fair to give the credit of this improvement to Brother *James Morrison*, who has personally superintended all the arrangements and has voluntarily proffered his services as instructor so long as it remains in any sense experimental.

The interest shown by the scholars proves that there is a class of workers in our midst ambitious for self improvement, and the fact that during the first two months

of the present session we had applications from more than twice the number that our school could accommodate, proves how vast is the field we occupy, and that the work to be done by our Society in this direction is only limited by its ability to meet the demand.

Respectfully submitted.

WILLIAM C. SMITH,
Chairman.

JOSEPH E. MACFARLAND,
Secretary."

In the report for the year ending December 31, 1885, the influence of the general movement for Industrial Education, begins to appear.

"Annual Report of the School Committee for 1885.

Cash received during the year from the sale of drawing materials and paid to the Treasurer of the Society.....	\$418.48
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Drafts on Treasurer of the Society :

For Salaries	\$2,402.00
" Supplies for School.....	421.78
" Repairs.....	45.04
" Stationery, etc.....	25.00
" Closing Exercises.....	35.00
" Printing By-Laws	8.00
	\$2,936.82

Your Committee takes pleasure in presenting the following Report of the yearly work :

The number of scholars enrolled since the reopening of the school on the 1st of October last, is 336 in the Male Department, and the average attendance 185, and for the entire year an average of 198 $\frac{1}{2}$. And the attendance for the Female Class for the year an average of 12 and an enrollment of 25.

The avidity with which the scholars address themselves to their several tasks in the departments to which they are assigned, and the advance they are making in the Mechanical, Off-Hand and Object Drawing, as well as the proficiency of the Modeling Class, is sufficient proof of the benefit and blessing that the Society is bestowing upon many a boy and girl, who otherwise would be deprived of acquiring the practical lessons, in the study of which they are so faithfully and efficiently taught.

The development of the Modeling Class has compelled the Committee to appoint a permanent teacher, who is effecting earnest and satisfactory results, which, we trust, will eventually lead to the opening up of a class of practical workers, as distinguished from that of Architect and Artist, so that they may learn the use of tools and implements employed in the several branches of mechanics, as recommended by our Ex-President, John H. Waydell, in his inaugural address.

In conclusion your Committee cordially invite and respectfully urge the members to give aid and encouragement to your School Committee, by visiting the school as often as practicable, feeling satisfied that the same will bear the closest investigation as to character and standing.

Respectfully submitted on behalf of the Committee.

JOHN L. HAMILTON,
Chairman.

HENRY MOORE,
Secretary."

The next annual report shows that the womans' class in free hand drawing has been given up, and in place of it, a womans' class in phonography and type-writing established.

The class in Free-hand drawing was pronounced "a barren tree," showing no definite results.

"Annual Report of the School Committee for 1886.

Cash received during the year from the sale of drawing materials, and paid to the Treasurer of the Society.....	\$541.35
Drafts on the Treasurer of the Society:	
For Salaries	\$2,364.00
" Type-Writing Machines.....	786.45
" School Supplies and Repairs.....	744.55
" Closing Exercises	54.88
" Printing Certificates.....	10.50
	<hr/>
	\$3,960.33

Your Committee, in presenting this their annual report, would note the following as a summary of their year's work:

The total number under instruction in the Male Department is 300, with an average of 189½. There has been no diminution of interest in this department during the year, and the high standard of intelligence and morale of the pupils entitle them to a meed of praise, and reflects honor and credit upon the society.

The departure made this year in the Female Department by introduction of the studies of phonography and type-writing calls for special mention, being such a vast improvement, as compared with the former class in free-hand drawing, that words are inadequate to express the possible benefit that may accrue to the 75 young ladies now receiving instruction. We trust the members of the Society will, by their kindly and continued coöperation, assist in making this feature of the school a permanent success.

Your Committee would report that, by permission of the Society, they have presented the old discarded drawing cards to the colored school at Hampton, Va.

Respectfully submitted on behalf of the Committee.

JOHN L. HAMILTON,
Chairman.

HENRY MOORE,
Secretary."

Thirty-eight young women were graduated in this first class and were soon all well employed, while it is asserted that, so far as known, but one such scholar was ever pecuniarily benefited by her training in the class of free-hand drawing.

This is doubtless largely due to the fact that those seeking this training with a definite purpose of thus utilizing their knowledge, have access to other schools offering better advantages.

The following is the report for the year ending December 31, 1887:

"Report of the School Committee for 1887.

Cash received during the year from the sale of materials and paid to the Treasurer of the Society.....	\$554.53
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Drafts on the Treasurer of the Society:

For salaries of Superintendent and Instructors.....	\$3,392.00
“ School Supplies & Repairs	756.92
“ General Expenses.....	207.57
“ Closing Exercises.....	72.38
	<hr/>
	\$4,428.87

Your Committee, in presenting this their Annual Report of the disposition of the funds placed at their disposal would note the following facts for the information of the Society :

The School commenced its sessions on the 17th October last. In the Male Department there are 205 under instruction in free-hand mechanical and architectural drawing and modeling in clay.

In the Female Department there are 89 pupils under instruction in stenography and type-writing. A unanimous vote of thanks was passed by the pupils of this department on the occasion of its first occupancy of the new school-room.

The Society may look for exceedingly satisfactory results at the end of the session, as the Superintendent and Instructors are faithful in their attention and practical in their methods, thoroughly understanding the branches they teach.

The Committee hope soon to be able to announce the readiness of the J. Morgan Slade Architectural Library, to be opened to the members of the Society, pupils of the School and architects of the city. From this nucleus may we not anticipate a future of activity and growth in this department that shall mark an important era in the history of the Society?

Respectfully submitted on behalf of the Committee.

JOHN L. HAMILTON,
Chairman.

HENRY MOORE,
Secretary.”

A courteous letter from the Secretary of the School Committee, Mr. Henry Moore, reports an average attendance during the session of 1887-'88, of 187 scholars, of whom 70 have applied for permission to attend next year.

The plan of giving up any instruction in free hand drawing in the male department of the school, had been suggested and was discussed by the School Committee; resulting, as a letter under date of March 4th, 1888, announces, in the retention of one of the two classes of Free-hand Drawing. “So that the several branches of studies during the session of 1888-'89 will be as follows: Free Hand, Decorative, Machinery, Mechanical, and Architectural Drawing; also a Class of Modellers in clay, for the purpose of instructing the pupils in the use of plaster ornamentation for decorating the ceilings of Dwellings. In the instruction of these several branches we trust we are covering the ground of useful and financial good to hundreds of young men, who may in the near future, honor themselves and the country by their genius.”

To judge from the practical views of the Directors of this society and from the class of pupils whose interests they seek to promote, it would seem quite possible that eventually their instruction may

continue to develop in this direction and take on, more and more, the character of Trade Instruction; with a group of Trade Schools for technical training in special industries.

The following is the report of the School Committee for the year 1888.

"Report of the School Committee.

Cash received during the year from sale of materials and paid to the Treasurer of the Society.....	\$440. 58
Drafts on the Treasurer of the Society:	
For Salaries of Superintendent and Instructors.....	\$3, 579. 00
“ Materials and Supplies.....	467. 48
“ Two Type-writing Machines.....	200. 00
“ Printing Certificates.....	97. 57
“ Opening and Closing Exercises.....	92. 05
“ Incidentals.....	38. 00
	<hr/> \$4, 474. 10

The Male Department of the School has maintained a high standard of deportment and attendance, and the advancement of the scholars in the several branches of drawing and modeling will warrant a reward of merited commendation. This department had an average attendance of 194 scholars since the opening of the School in October last, and is the best showing of attendance for the number enrolled that the School has ever made.

The Female Class in Stenography and type-writing, which was limited to the number of 60 at its opening in October last, has by virtue of unavoidable circumstances fallen off to the number of 49, and these are accomplishing good and satisfactory results in this branch of useful instruction.

Of the 44 young ladies who graduated from our School in June last, all are employed, which must be gratifying information and a recompense to the Society for the money expended in this branch of its benevolence.

It was deemed advisable to purchase two more type-writing machines. At the same time the Messrs. Wyckoff, Seaman & Benedict, agents of the Remington Machines, presented the committee with one to take the place of the one stolen about a year ago. We have now twelve No. 2 Remington Machines in perfect order.

Respectfully submitted on behalf of the committee.

JOHN L. HAMILTON,
Chairman.

HENRY MOORE,
Secretary."

The report of the School Committee for the year 1889, shows the receipt of \$341.37, from the pupils, and an expenditure for the schools of \$4,288.60. The Committee say :

"The School Committee, in presenting its annual report, would state that the regime of the school and aptness of the scholars in the two departments, backed by persistent and honest effort on the part of the Superintendent and Teachers, bespeak results equal if not in advance of former years.

The Committee with the advice and counsel of the Special Committee from the Society, have taken a very great interest in those who were selected to fill the Free Scholarship in the New York Trades Schools, and they, in return, appear to be

earnestly striving to take upon themselves honorable distinction in the branches of trade of their choice.

Your Committee would suggest to the members the good they might accomplish by visiting these trade schools as well as our own schools at Mechanics' Hall.

Respectfully submitted.

JOHN L. HAMILTON,
Chairman.

HENRY MOORE,
Secretary."

The following report upon the two Schools by the Superintendent, is given in the Annual Report of the Society for 1889. This is of interest as showing how the former womens school—(in which the fact that drawing was taught, alone gave it entrance into the present report;)—has developed into a special trade school; while in the men's school the drawing and modelling taught is especially designed not for general artistic training but for practical application in the building trade; thus emphatically illustrating the direct connection between Art and Industry.

"SCHOOL SUPERINTENDENT.

FEMALE DEPARTMENT.

Number of pupils composing Class formed October 1st, 1888	60
Number of resignations during term.	13
Number of pupils graduated, June 7th, 1889	33
Of whom there are now holding positions as amanuenses	20
Number of pupils composing Class formed October 1st, 1889	60
Number of resignations to date.	7
Total number of graduates since organization of Class in 1886	115

The evening classes for shorthand and typewriting meet four nights in the week from October to December; and every night in the week from January to June, each pupil, however, receiving but two lessons a week, the classes being graded according to the capacity and ability of their members.

The afternoon typewriting class meets every day in the week from 4 to 6 P. M. during the fall and winter terms.

Three examinations are held: one, in the commoner English branches, for admission to the class in the fall; one in December, at the close of the fall term, and one at the end of the course, in May, for diplomas and graduation. A nominal charge is made for the few text-books required, the total amount not exceeding one dollar for each pupil, which is the only expense incurred.

The classes are composed of young ladies employed during the day in various kinds of business, such as saleswomen, cashiers, telegraph operators, dress makers, milliners, etc., but with the instruction received will be enabled to fill much more desirable positions.

Respectfully submitted.

WILLIAM L. MASON,
Superintendent."

"MALE DEPARTMENT.

I respectfully submit a brief statement of general information concerning the present condition and operation of the Free Drawing School, with some information as to its extent and purposes, which may be of interest to such members and

Instruction in the school is limited to drawing and modelling, such as is particularly applicable to the various trades, and absolutely necessary in their following. Useless work is eliminated, and nothing taught that is not of practical value to the scholar.

In the organization of the several classes—now numbering six—the purpose is to cover as large a field of specialty as possible, and to meet the requirements of all learners, by the employment of selected and qualified teachers, that possess a knowledge competent to instruct those that come far advanced, as well as beginners.

In regard to the success attained on this line of purpose, the best evidence of it is to be seen in the character and interest of the scholars. A gradual improvement in this respect is noted from year to year, and the present composition is of a class so earnest and intelligent to spend their time in useless work, many of them continuing their study from year to year. This fact alone is of unquestionable significance.

The accommodation of the school room is limited to about 200 scholars, and the total average daily attendance, for the present season, has been 188. The seasons commence on the first Monday of October of each year, and sessions are held the first four evenings of each week, from 7 to 9 P. M., until the following March, less holidays and vacations, making about 87 sessions each season.

The useful work of the Society, in its "Free Drawing School," is fully and thankfully appreciated by thousands who have received its benefits without the opportunity to acknowledge them.

The school is at present classified as follows:

Architectural Drawing.—This is a class of masons, bricklayers, carpenters, stonecutters, and others engaged directly in the sundry operations of the building trades, and are obtaining a knowledge of the *language* of their work, of which drawing is the grammar.

Average attendance, 32.

Mechanical Drawing.—In this class is taught the rudiments and principles of geometrical drawing, and the special problems pertaining to the construction of complicated carpentry and joinery, stairbuilding, sheet metal work, etc.

Average attendance, 35.

Cabinet Work and Drawing.—A class for those in the trades of cabinet work, furniture and decoration, also comprising wood carvers, ornamental metal workers and tradesmen, in general interior decoration.

Average attendance, 33.

Free Hand Drawing.—In this class is taught general free hand drawing, both from flat copy and cast, pertaining to the requirements of fresco painters, designers in stucco, wood and stone carvers, chasers, engravers, lithographers, etc.

Average attendance, 39.

Modelling in Clay.—Instruction is given in this class in modelling and casting, with a line of work specially applicable to the modern style of building, decoration, both interior and exterior. The pupils are decorators, in plaster or composition, stone and wood carvers, and ornamental metal workers.

Average attendance, 15.

Machine Drawing.—A class designed for the instruction of machinists and pattern makers, in machine drawing particularly, the preparation of detailed working drawings, in accordance with the most modern shop practice.

Average attendance, 34.

Respectfully submitted,

JOHN C. BABCOCK,
Superintendent."

The following report of the School Committee giving the history of the schools for 1890, is from the Annual Report of the Society for 1890.

"School Committee.

Cash received during the year and paid to the Treasurer..... \$368.80

Drafts on the Treasurer :

For Salaries of Superintendents and Instructors	\$3,766.00
“ Materials and Supplies.....	647.01
“ Closing and Graduating Exercises	130.75
“ Contingencies	41.11
	<u>\$4,584.87</u>

The School Committee, in presenting their annual report, take pleasure in stating that the labors of the year close with the most gratifying results.

The number of applications to enter the several classes, both in the male and female departments of the school, is evidence of the efficiency of those to whom the instruction of the scholars has been confided in the past.

The attendance in the male department is worthy of note. For the past quarter ending December 31st, 1890, being an average of 195, as compared with the first quarter ending in March of 154.

The same satisfactory report can be made of the female department.

In June last, thirty young ladies were graduated from the Stenographic Class, at a rate of speed varying from 75 to 150 words a minute; all of whom are believed to be employed.

At the opening of this department on the 2d of October last, 156 applicants presented themselves for examination. The high per cent. of intelligence manifested determined the Committee to increase the number of the class from 50 to 75. Of those examined were selected those who had passed an examination of 85 per cent. From this material your Committee feel justified in expecting advanced results.

Owing to the arduous labors attaching to the instruction of this study, the Committee deemed it advisable to place the teaching of type-writing in other hands than that of the instructor of the Stenography Class, as heretofore, and have employed an expert teacher in this department, who has that branch of study in a most satisfactory state of advancement.

Respectfully submitted on behalf of the Committee.

HENRY MOORE,
Chairman.

JOHN E. NICHOLSON,
Secretary."

The following general statement concerning the schools is taken from a letter received from Mr. John E. Nicholson, the present Secretary of the School Committee, under date of December 29th, 1891.

"Each class has a competent Instructor and the school is presided over by a Superintendent who has had years of experience in dealing with our Scholars. The male department meets four evenings each week—the first four evenings—from the hours 7 to 9, during the months October to March inclusive.

At the opening sessions in October the school room is taxed to its utmost capacity 225, while during the intervening months until March the attendance falls off gradually, from sickness and various causes, until a nightly average attendance of about 180 is secured of those who are really deriving benefit from the instruction given and are attentive to their duties. When it is considered that the young men.

SCHOOL OF THE NEW YORK TURNVEREIN—DRAWING CLASSES.

Among the institutions in the City of New York which afford opportunity for training in industrial art drawing, the Drawing classes of the school of The New York Turnverein, merit honorable mention. This school, like those of Cooper Union, not only provides instruction for those who have not been able to obtain it elsewhere, but also supplements the training given in the public schools. In order not to interfere with attendance upon other schools its hours are so arranged as to render attendance upon both possible ; the classes of the Turnverein School commencing at 4. P. M.

The development of this school with the importance now given in its course to instruction in drawing, is of interest as showing the judgment of its managers as to the practical importance and direct value of this study ; for the school was established, originally, with no view of affording such instruction, or indeed with any purpose except for training in gymnastics. In the table of studies and attendance given below and which is furnished by the Principal of the school, Mr. H. Metzner, it will be observed that, in addition to training in gymnastics, which is required of all, and in military exercises, which last may be held to be a species of gymnastics, the study of the German language, naturally in a school under the patronage of a society of Germans, receives great attention ;—the additional studies are mostly those which bear directly upon the industrial and practical side of life ;—book-keeping and drawing for the boys, and drawing and needle work for the girls.—

The New York Turnverein was established June 6th, 1850.

The school was established some two years later for instruction in gymnastic exercises only, other branches were gradually added; instruction in German first, and later in drawing.—

The mother tongue and the Universal Language, neither of which were then taught in the public schools.—

Before 1870, the average attendance was about 250. In that year the society removed to new and more commodious quarters, No. 66 and 68 East 4th street, and 15 and 17, East 3rd street.

With ampler accommodations the attendance largely and rapidly increased and the courses of study were enlarged.

The following table gives the statistics of attendance, and of classes and studies, for the two years ending June, 1883. It will be seen that the number of pupils is still increasing.

There is no limitation of nationality, children of American and

other nationalities attend, though the larger number of pupils are, naturally, Germans. A payment of 50 cents a month is required, but tuition is free to those whose parents are unable to pay. All take gymnastics, the other classes are optional.

Studies.	June, 1882.				June, 1883.			
	Boys.	Girls.	Total.	Classes.	Boys.	Girls.	Total.	Classes.
Gymnastics	747	176	923	29	831	244	1,075	35
German Language	484	138	622	14	584	235	819	15
Freehand drawing	513	118	631	11	526	182	708	16
Linear drawing	70	.....	70	2	80	.....	80	2
Modelling	15	.....	15	1	20	.....	20	1
Book-keeping	80	.....	80	2	67	.....	67	2
Singing	134	99	233	3	168	156	324	3
Moral and ethical culture in Sunday School	95	24	119	2	96	40	136	2
Military exercise	90	.....	90	* 4	115	.....	115	* 4
Needle work .....	.....	120	120	3 C.	.....	140	140	4

* Companies.

It is with the drawing and modelling classes only that this report is concerned. Instruction is given in both industrial and high art.

The society possesses a large collection of casts, some 600 in number, comprising antique and modern statues, busts, bas-reliefs, rich ornaments, etc., formerly belonging to the late E. Plassman, sculptor—"Many of the models are unique and were executed by Plassman's most talented pupils."

It will be seen from the account of the methods of teaching given below in the extracts from a letter received from Mr. Metzner, principal of the school, that the instruction is progressive and orderly; beginning with the simplest rudiments of drawing, and ending for the older pupils fitted to receive it, with drawing from the cast and from living models.—The latter class but recently established.

It would be interesting to know whether this natural development was in accordance with a demand arising from the pupils who wished to advance from artizanship to art.—

Mr. Metzner says :

"Particular attention is paid to Freehand drawing and we may say that our drawing scholars have a good reputation in the different art and industrial establishments where the art of drawing is required.

The lower classes are instructed by means of charts and blackboard drawings, especially made or arranged by the teachers; straight and curved lines, geometrical figures, natural leaves conventionalized and vases—are the main objects in these classes. The intermediate classes draw from copies, mostly ornamental and from objects. In the higher class, the more artistical drawing in all its branches is the principal aim, also drawing from the cast." * * *

The modelling class and highest drawing class, are only attended by young men from 16 to 24 years, the model class was established but two years ago.

The teachers for drawing and modelling classes are all practical draughtsmen, their names are :

H. Metzner, Principal. (Sculptor.)

G. Gruenewald, (Artist.)

R. Singer, (Sculptor.)

E. Eifer, (Engraver.)

The following letter from Mr. Metzner under date of September 15th, 1888, summarizes the progress of this school since 1883, the date of the latest previous information.

The principal writes as follows :

" Within the last few years, no considerable change has taken place in the condition of the school of the N. Y. Turnverein.

In June last the number of scholars attending the School was Boys 6-14 years of years, 720, over 14, 90. Girls, 270. A total of 1080 pupils.

All scholars, girls and boys, attend the regular lessons in Physical exercises. About 80 per cent of this number take part in the German and the Drawing lessons. We have 12 drawing classes for boys, and 4 for girls. A new course for linear and perspective drawing will be opened in October.

Modelling is, since last June, no longer a regular branch of instruction ; we have now in this city so many art schools with classes for modelling that our modelling class with but one lesson per week, could easily be abolished ; still we may open a new class in a short time for such members of the society and older scholars who follow some artistic trade and have no time to attend a modelling class four and five times a week."

* * * * *

A later letter received from Mr. Metzner, under date of December 17th, 1891, states that no considerable change has occurred in the drawing classes of the school since 1888. " The number of pupils, of classes, and the names of the teachers are the same ;" so that the report for 1888 is practically that for 1891.

BOARD OF SCHOOL TRUSTEES FOR 1892.

George Schmid, Chairman.

James Luewenherz, Secretary.

Henry Ruloff, Treasurer.

Fr. Flaccus, Wm. Hartfield, Otto Laehr, F. N. Matt, Chr. Schuler.

THE HEBREW TECHNICAL INSTITUTE, NEW YORK CITY.

The extent and force of the present movement impelling the community to provide facilities for the industrial and technical training of youth, which is a characteristic educational feature of the day, finds emphatic illustration in the opening by the Hebrew Benevolent Societies, of industrial schools for the children of their own faith, in the cities of Philadelphia and New York. The school in Philadelphia, to which Mr. David Sulzberger, the secretary of the "Hebrew Education Society" of that city, has given such enthusiastical devotion; has already been referred to.* This is an industrial school, pure and simple, solely designed to give wage earning knowledge, and had its origin in the desire to keep the children of the Russian exiles from beggary and street peddling. As a development from this beginning may be reckoned the subsequent addition of another class of older pupils who are taught the trade of cutters of patterns for Tailors—a Trade School for Tailors, in fact.

The New York School which is now to be described is of a very different class of institutions, and is analogous, for the first two years of its course of three years, to the typical Manual Training Schools; while, in the third year, the pupils are divided into Trade classes, for specific training in definite industries.

I am indebted to the courtesy of Mr. H. M. Leipziger, Ph. D., the Director of the school, for the following account of the origin of the school and for the letter summarizing the subsequent history and enclosing copies of the schedules of the courses of instruction.

"HISTORY OF THE SCHOOL.

In the latter part of November, 1883, a meeting of gentlemen, representing the Hebrew Orphan Asylum Society, the Hebrew Free School Association, and the United Hebrew Charties, was held; and, after serious deliberation, a society was organized for the purpose of promoting industrial pursuits among Israelites, and as the first step toward that end it was resolved to open a school for the Technical Education of boys. About Jan. 1st, 1884, the preliminary session of the school was opened at 206 East Broadway, and twenty-five pupils were present. The quarters were found too limited and on the first of May, 1884, the school was removed to the sixth and seventh stories of the building 129 Crosby St. where steam power and abundant light afforded great advantage. It was not, however, until the fall of 1884, that the real work of the school commenced. On September 1st, 1884, there were twenty-seven pupils which number increased to forty-five by Jan. 1st 1885.

There were four teachers, one in the English Department, one in the wood working department, one in Mechanical drawing and one in free hand drawing. In this early period of the school's work much time had to be devoted in establishing a sin-

* See Part II of this Report, page 67.

cere interest in the kind of instruction given in the school. The course of instruction was arranged so that pupils could attend the entire day at the school and not lose the benefit of instruction in those branches taught in the Common Schools. The results for the first few months were found to be highly satisfactory as evinced by the intense interest the pupils showed in their work and the decided skill many of them exhibited. The equipment of the woodworking department was therefore extended by the addition of a number of Lathes, and instruction in wood turning was then given.

GROWTH OF THE SCHOOL.

During the year 1885 the school gradually increased until five classes were formed from a membership of sixty-five pupils. During that year instruction in Modelling in Clay with highly satisfactory results was begun, and the school, also, during the summer, opened its doors to pupils of the public schools who might desire to gain some useful knowledge during their vacation; the attendance during the summer was about an average of one hundred. During the year 1886, the number of regular pupils increased until at the close of the year there were in attendance eighty-six pupils. While during the summer session of that year there was an average attendance of one hundred and five pupils.

Fixed dates for admission were determined and the course of instruction was widened by the opening of the metal working department, and the instruction in wood carving. The teaching of these branches necessitated the addition of two instructors to the corps. A decided stimulus was given to the work of the school by the excellent showing made by its pupils at the children's Industrial Exhibition held in Cosmopolitan Hall in April 1886. At this exhibition about one hundred specimens of the work of the boys covering construction work in wood, pattern making, mechanical devices, modelling in clay, wood turning and free hand and mechanical drawing, were exhibited and fourteen medals were awarded to the pupils of this Institute, among them being the first prizes for carpentry and wood turning. The school had up to this date derived its entire support from the contributions of the Hebrew Orphan Asylum Society. The United Hebrew Charties and the Hebrew Free School Association, supplemented by liberal donations from a few philanthropic gentlemen, chief among whom were Messrs. J. H. Schiff, D. L. Einstein, J. H. Hoffman, A. Wolff, and Jesse Seligman.

THE SCHOOL SUSTAINED BY THE PUBLIC.

The school having in the second year of its existence demonstrated not only its value but its need, and its practicability having been fully proven, it was determined to appeal for support to a larger field and make the Institution a public one. On April 23d, 1886, a large audience gathered in Temple Emanuel, and addresses were made by the Hon. Carl Schurz, Jesse Seligman, Esq., the Rev. Dr. Gottheil, Dr. O. A. Moses, and Dr. H. M. Leipziger, explaining the work of the school; as a result of this meeting and particularly of the Hon. Carl Schurz's able address, a large sum was donated that very night and a membership society was formed. About two hundred members and patrons signed their names. Encouraged by this evidence of public favor steps were immediately taken to secure suitable premises for a permanent home for the Institute. This result was attained in the purchase of the present site of the school, 34 and 36 Stuyvesant St., in September 1886; the fund for the purchase of the property was contributed by about thirty liberal gentlemen. Under the charge of Messrs. Brunner and Tryon, the new shop building for the Institute was erected and in February 1st 1887, the Hebrew Technical Institute entered its new home. Here arrangements were made for shops and commodious drawing and English rooms.

ARRANGEMENT OF THE SCHOOL BUILDING.

The present building of the Institute is divided into separate parts, one four story building containing the shops, the other the school rooms, drawing rooms and laboratory. The shops are as follows, ground floor, forge room, first floor, metal working department. Third and fourth floors, wood working and modelling in clay.

The other building contains on the ground floor dining rooms where pupils receive a nice dinner free, daily. First floor, office and assembly room. Three other floors devoted to class rooms and drawing rooms. In the rear building may be found the Engine room and laboratory, equipped with 25 Horse Power Engine and Dynamo and many appliances for teaching Physics. The number of pupils in attendance September 1888 was 105."

LETTER FROM DR. LEIPZIGER.

[“ Hebrew Technical Institute, 34 & 36 Stuyvesant St., New York City].

To I. EDWARDS CLARKE,

Editor Art & Industrial Report.

SIR: In answer to your letter of October 2d 1888. In the fall of 1883, it was proposed among a few of the wealthy and progressive Hebrews of this city, to do something for the advancement of the children of that people. As a result, a school was established for the purpose of teaching the boys the use of tools and the elements of some special trade in addition to their English branches.

The school was first opened in January 1884, at 206 East Broadway, and supported by the Hebrew Free School Association, the Hebrew Orphan Asylum, the United Hebrew Charities, and five interested gentlemen. At the opening the school contained twenty-five (25) boys, and four departments, viz: The English, Wood-Working, Free-Hand Drawing, and Mechanical Drawing, with an instructor in each department. In a very short time the school increased in numbers, requiring more commodious rooms and the school was removed to the sixth and seventh stories of the building at 129 Crosby St., where plenty of light and steam-power were available. In January 1885, the number of pupils was forty-five. The average attendance being over 95 per cent.

In the year of 1886, a membership of annual contributors was formed. And the buildings at No. 34 and 36 Stuyvesant St. were purchased and refitted for the school the school moved to that number in February 1887.

The departments in the school now, are the English, Free Hand Drawing, Mechanical Drawing, Wood Working, Metal Working, Wood Carving, Modelling, and Physical Laboratory apparatus.

The school now numbers 105 pupils, and seven instructors.

The school is free. The Ladies' Auxiliary Society of the school furnishes a warm dinner each day for the boys.

No regular report or catalogue of the school has as yet been published.

There are five classes in the school, fixed dates for admission with a requirement of 12½ years of age, and to pass in the studies of the fourth grade of the public school.

Our school resembles the St. Louis Manual Training in general aim, but is of course much more elementary as our pupils are younger.

The school combines the educational and the practical; the aim of the school is practical, the methods educational. Most manual training schools claim that they do not teach trades, but give a general knowledge of tools. As a fact, however, the majority of the graduates of these schools do enter trades or industries.

Our school being supported by charitably inclined people, aims, ultimately, to have all the pupils to enter industrial lines. The course of instruction, broad at the beginning, in the closing year specializes itself. The school may fairly be styled one similar to the Ecole Diderot in Paris.

In the Public Schools of our great cities Manual training can never, and should never, become specialized to any extent, but all the Manual exercises should have, as their purpose, general and harmonious training, and the development of hitherto neglected aptitudes.

H. M. LEIPZIGER."

"HEBREW TECHNICAL INSTITUTE.

COURSE OF INSTRUCTION.

This course is arranged on the basis of general instruction in the use of tools, drawing and the general branches, to cover a period of two years, the third year to be devoted to preparation for some especial branch. Age of admission twelve and a half years. The instruction for the first two years, is general and may be subdivided into three departments. 1st English department, 2d Drawing, 3d Shop. The relation between the drawing and shop departments is very close, while the mathematics taught in the English department should be practical and bear upon the shop work. The English department includes instruction in the following branches: First, Mathematics, A. Arithmetic, B. Geometry. Second, History, Geography, Reading, Writing, Language Lessons, Physics and Industrial topics.

Drawing department includes free-hand drawing (model, object, and decorative drawing) and mechanical drawing.

Shop work.—A. Wood working, B. Metal Working. Under wood working the following are the stages. 1, Pasteboard work; 2, Bracket sawing; 3, Construction work, in bracket sawing; 4, Preliminary exercises in use of saw, try square and chisel; exercises in nailing and use of hammer, joinery, construction work, wood carving, pattern making, moulding and casting. Metal working should commence with exercises in tin and soldering, light work on speed lathe, Forge work, chipping and filing, Engine lathe work shaper and planer, drill press, construction work.

By the end of the second year, the special aptitude of the pupil will be evidenced and arrangements should be made for as lengthy a stay each day in that shop, which will prepare him for his special trade. Thus the pupils in the wood working department should in the third year devote their entire time to wood working; either pattern making, cabinet making, or carpentry and drawing; while those who show an aptitude for machinery should devote their entire time in the metal working shop, and mechanical drawing. One hour a day only being given to Physics and Mathematics.

COURSE OF INSTRUCTION.

First Year.

English Department.—Arithmetic, Geometry, Mensuration, English Language, History, Geography, Physics, Penmanship.

Drawing Department.—Freehand and Mechanical Drawing, Modelling in Clay.

Shop Work.—Pasteboard work,—elementary and construction. Bracket saw work,—elementary and construction. Use of tools,—care of tools, woods, their varieties and characteristics, joinery,—turning in wood—wood carving.

Second Year.

English Department.—Arithmetic, Geometry, Mensuration, Physics, English Language, History, Geography, Industrial Topics.

Drawing Department.—Mechanical and Freehand Drawing, Modelling in Clay.

Shop Work.—Carpentry and Joinery, Wood Turning, Wood Carving, Pattern Making, Construction work in the wood working department, Chipping and Filing, Forging, Soldering and Brazing.

Third Year.

English Department.—Algebra, Geometry, Physics, Mechanics, Civil Government.

Drawing Department.—Machine and Architectural details, Freehand, decorative, designing, &c.

Shop Work (Special Work).—(a) Wood work—pattern making, carpentering, cabinet making, moulding and casting, (Construction work.)

(b) Machine work, Turning, drilling, planing, Machinery, Care of Engine and boiler.

(c) Electrical machinery.

(a) Theory—(b) practical applications.

First year, time in shop daily 2 hours.

Second year, time in shop daily 2 hours.

Third year, time in shop daily 3 hours.

DRAWING DEPARTMENT.

A. Freehand. 1st. Drawing from objects, practical perspective, light and shade, drawing from casts, sketching, use of crayon and stump.

B. Mechanical drawing. 1, use of instruments. 2, drawing of developments, (pasteboard work). 3. Block lettering. 4, Freehand lettering. 5, Elementary working drawings. 6, Simpler working drawings based on chipping and filing exercises. 7, Freehand elevations, plans, and sections of various objects. 8, Working drawing of joints. 9, Drawing to scale. 10, Geometrical construction and use of ink. 11, Projection drawing. 12, Round writing. 13, Working drawings, from patterns. 14, Isometric projections. 14—A—Intersections. 15, Water coloring in flat washes. 16, Drawing in detail of machines and their parts, or of cabinet work in course of construction. 17, Elementary architectural drawing. Nos. 16 & 17 for pupils engaged in special work.

Time for both these departments one and a half hours daily.

13.—A. Tracing and blue printing.

WOOD WORKING DEPARTMENT.

(1) Description of shop, bench, and chief tools.

(2) Pasteboard work.

(a) laying out work ; knife, pencil, rule, eleven exercises from drawings, made by the pupils, including the chief geometrical forms.

(3) Bracket sawing in thin wood, pine or holly.

(4) Construction—bracket saw.

(5) Chief woods,—their origin and general use.

(6) Description of bench tools.

(a) Measuring tools.

(b) Cutting tools.

(c) Miscellaneous tools.

(7) Preliminary exercises in the use of saw, hammer, and chisel.

(8) Course of joints including the chief joints in use.

(9) Methods of grinding, oil stoning and setting planes ; and the care of tools, dwelt upon.

(10) Instruction to be continued in the nature of woods. The character of tools.

(11) After the sixth joint has been completed, instruction in the lathe work, may commence and continue, thereafter contemporaneously with bench work.

(12) Construction, work commenced, making of a box.

(13) Use of veneer, and polish, in making a veneered cube.

(14) Making of a veneered desk.

(15) Construction of various articles.

(16) Joints used in connecting timbers direction of their length, explanation of strains.

(17) Door frame and panel.

(18) Truss work.

(17 and 18) for special work.

(19) Pattern making.

(20) Moulding and Casting.

The pattern making to include the patterns from the exercises used in the metal working department, and from the parts of the machines there constructed.

The wood carving department after the proper skill has been attained by the pupil should work on material constructed in the shop, and from drawings made in the free hand department.

METAL WORKING DEPARTMENT.

Includes work in tin, lead, iron, steel and brass.

(1) Work in tin.

(2) Forging, preliminary exercises, drawing, bending, upsetting, &c., first in lead, then in iron, soldering and brazing.

(3) Speed lathe work.

(4) Engine lathe work, chipping & filing.

(5) Use of drill and planer.

(6) Construction work; a variety of combination pieces executed by the members of the class jointly, or separately. This work should be made from detail drawings made by the pupils and castings made from their own patterns.

Tools, speed lathes, electrical apparatus, and small engines afford abundant work for exercises.

No pupil enters the metal working department, (unless specially qualified) till he has been in the school nine months.

At proper intervals, and at the appropriate time, visits are made to different establishments where work can be seen in operation, similar to that in which instruction is at the time being given.

A library of well selected, general and scientific books is at the pupils disposal.

The following circular, issued by the school, is printed in both English and German :

[Hebrew Technical Institute, 34 & 36 Stuyvesant street, bet. Second & Third aves., New York.]

New Classes are now being formed in this School. Instruction is given in Free-Hand Drawing, Mechanical Drawing, Mathematics, Physics, the English Branches, Wood Turning, Wood Working, Wood Carving, Metal Working, and Modeling in Clay. The full course requires three years for completion. During the first two years the principles of many trades are carefully impressed upon the pupils, and in the third year special trades, selected with reference to the aptitudes and preferences of the pupils, will be taught, so that upon leaving the school they may be able at once to engage at work in some special branch. Instruction, books, and tools are free.

Applicants must be over twelve years of age, and are required to pass an examination.

All desirous of joining the school must apply to the undersigned.

School hours are from 9 A. M. to 4 P. M.

HENRY M. LEIPZIGER, Ph. D.,

Director.

THE BOARD OF DIRECTORS FOR 1888-1889.

President—JAMES H. HOFFMAN.

First Vice-President—DAVID L. EINSTEIN.

Second Vice-President—OTTO A. MOSES.

Treasurer—LEO. SCHLESINGER.

Secretary and Director of the School—HENRY M. LEIPZIGER.

M. W. Benjamin, J. B. Bloomingdale, Simon Borg, G. A. Goldsmith, Henry Herrman, Edward Lauterbach, J. J. Lyons, Benj. F. Peixotto, Henry Rice, Benj. Russak, Jesse Seligman, Sol. B. Soloman, H. Steinam, M. Thalmessinger, Morris Tuska, Prof. S. Woolf.

THE FACULTY OF THE INSTITUTE.

Henry M. Leipziger, Ph. D., Director ; Edgar S. Barney, A. B., C. E., Instructor in English Branches and Physics.

Geo. E. Tuthill and Geo. Stagen, Wood Working Department.

Jas. Bayley, jr., Metal Working Department.

Vaulx Carter, Mechanical Drawing.

J. T. Hill, Freehand Drawing and Modelling in Clay.

S. Badanes, Mathematics.

CHAPTER V.

THE COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART—NEW YORK CITY.—THE FREE NIGHT SCHOOLS OF SCIENCE AND ART.—THE PRATT INSTITUTE, BROOKLYN, NEW YORK.—THE DREXEL INSTITUTE, PHILADELPHIA, PENNSYLVANIA.

This Institution founded by one man, Peter Cooper of New York—The death of Mr. Cooper, in 1883, an occasion of general acknowledgment of his great services to the Community—His character in many ways resembled that of Benjamin Franklin—Memorial Resolutions passed by The Union League Club—Mr. Cooper celebrates his Eightieth birthday, February 12th, 1871, by an additional gift of \$100,000 to Cooper Union—Interesting recognition of this by the graduating class at the Commencement exercises of that year—Reception given to Mr. Cooper on his Eighty-Fourth Birthday, by The Arcadian Club of New York City—List of officers of the Club and of the Reception Committee—This brilliant event, participated in by leading representative citizens in every walk in life, was commemorated in a privately printed pamphlet from which the account here given is compiled—Auto-biographical statements by Mr. Cooper, in his response to the welcoming addresses by Algernon S. Sullivan, Esq., Chairman of the committee of arrangement, and Hon. Henry G. Stebbins, President of the Club—Columbia College, Cornell University, and Princeton College, represented by their Presidents, who each made brief addresses—The City School system represented by The President and members of the Board of Education—Addresses by Wm. Cullen Bryant, Chief Justice Daly, Judge Woodruff, and others—Extracts from addresses by President Andrew D. White, of Cornell, and by Rev. Dr. Deems, of the City—Letters from President's Porter, of Yale, and Elliot, of Harvard—Extracts from articles in The Evening Mail and in the New York Times.—Mr. Cooper's ardent patriotism—Shown during the War, and ever since, in his written plans for the direction of the Union—His comprehensive and far reaching plan in founding the Union, as embodied in the Charter—He creates a Board of six Trustees—The oldest lineal descendant of Peter Cooper, shall always be a member of this Board, "ex gratia"—Recital of the provisions of the Charter—Letter from Mr. Cooper accompanying the Trust Deed—His expression of faith in the informing ideas of the American Republic—The fact that the pupils are to be citizens of the Republic is never to be lost sight of—The purpose and object of the opportunities here given is to make them better citizens—His high ideal of Character—His broad and lofty views contrasted with the narrow views of education held by some—The corner stone laid in 1854—The Deed of Trust executed and the building formally transferred to the Trustees April 29th, 1859—Mr. Cooper's statement of the causes that led to the conception of his plan given in his address to the graduates, which is quoted in the 15th Annual Report—First Annual Report (Jan. 1st, 1860)—About two thousand pupils admitted to the schools—The study of Industrial Art drawing made fundamental—The Woman's School of Art adopted as a department of the Cooper Union, and the "Lady Managers" of that school, enrolled as an "Advisory Council"—The Bryan Gallery of Old Masters, with other loan pictures exhibited as a Free Art Gallery in the rooms of the Institute—Advanced views of the Trustees as expressed in their first report—The cooperation of other benevo-

lent citizens invited—List of Board of Trustees and of Instructors for 1859-'60—Fifth Annual Report—Incident at Commencement 1864, when the members of the first graduating class were each personally presented to Mr. Cooper—Tenth Annual Report—Eighteenth Annual Report—The Library opened, for the first time on Sunday, October 6th, 1872—The Nineteenth Annual Report 1878—The work of the Union reviewed by Trustees, Curator, and Instructors—22d Annual Report (1881)—Two stories added to the Building—Additional gift of \$10,000 by Mr. Cooper to the "Golden Wedding Fund"—The addition to the building cost \$70,000—This was paid by Mr. Cooper and a gift of \$30,000 added to the general fund—Pressure on the Schools for admission—Only the Community by public action can meet the educational needs of the People—The Seal of the Corporation described—Extracts from By-Laws—The Free Night Schools of Science and of Art—The Free Reading Room, The Lectures, and the Women's Day School of Art, are all opened to the public by the Trustees of Cooper Union—24th Annual Report (1883) includes a succinct history of the institution—For twenty-four years there was no death among the members of the Board of Trustees—Mr. Cooper, in venerable old age, was the first to die—Curator's report in 24th Annual Report—Statistics of attendance, etc.,—Officers for 1883—The Twenty-Fifth Annual Report—Summary of statistics of attendance on the several schools—A free class for Women in Phonography and Typewriting opened—This precedent followed by The New York Society of Mechanics and Tradesmen in 1886—The School of Telegraphy—No more Annual Reports printed till May 28, 1887—Summary of financial statements for the three successive years—Statement of the Trustees—Enormous expense incurred by the necessity of strengthening and practically rebuilding the foundations of the building—Cost met by the children of Mr. Cooper—Trustees appeal to public to increase endowment Fund—Summary of students attending 1886-7—Statement by Curator of number of applicants refused for want of room, showing how great is the pressure upon the facilities of the Union—The free lectures resumed in the autumn of 1886—The Twenty-Ninth Annual Report May 26th, 1888—List of officers and trustees 1888.—The Free Night Schools of Science and Art—Mr. Cooper's statement of the origin of his purpose and plan—Description of the Building—Statement of the work of the Cooper Union for the first twenty years, by the curator in the 19th Annual Report 1878—The report of the school for 1877, by Director Tisdale—Extracts from Reports of Director of the School, with programmes of studies and statistics of attendance from 1879 to 1888, inclusive.

The Pratt Institute, Brooklyn, New York—Incorporated 1887—opened in Autumn of 1887—Purpose set forth in Act of Incorporation—The gift to the community by one man, Charles Pratt, Esq.,—Letter from Mr. Pratt, reciting the origin of his purpose—He refers to the example of Peter Cooper, George Peabody, and others, as inciting him to do likewise—The Act of Incorporation—Likeness and differences between this new Institute and Cooper Union—Great similarity of purpose in the main—The buildings—The machine shops for Manual Training—The Free Circulating Library and Reading Room for the public—The Art Department in charge of Mr. Perry, formerly supervisor of drawing in Public Schools of Worcester, Massachusetts—Possibility and desirability of further artistic development—The Technical Museum—The Trade Schools—Cooking Schools—Schools open to pupils of both sexes—Mr. William Sartain, the artist, quoted—Thirty teachers already employed—over a thousand pupils in attendance in the Autumn of 1888—The description of the buildings, equipment and departments, compiled from the official publications in pamphlet form and in the *Scientific American* of October 6th, 1888—Resources—The "Astral" Apartments, the rent to be given to the Institute—The buildings of the Institute are on a grand scale and all the appliances are of the best, and provided in the most liberal way—

Every facility furnished to render the equipment of each department complete—Large play grounds attached to the buildings—A noble addition to the educational resources of this country—Worthy to rank with the foundations given by Cooper, and by Girard, and abreast of the latest educational movements.

Letter from Mr. Perry, Director Art Department, dated December, 1891, refers to the recent death of Mr. Charles Pratt—Address by the founder, Mr. Charles Pratt, detailing the development of the Institute up to that time, delivered October 2, 1890—Summary of events by the Secretary—Rapid increase of attendance—Library opened to the general public, with large circulation—Address by Mr. Charles M. Pratt, President of the Board of Trustees, delivered on Founders' Day, October 2nd, 1891—Presentation address by Mr. Perry for the pupils, in presenting bronze bust of Mr. Charles Pratt to the Institute—Secretary's Report for 1890-'91—Official statement of Art Department for 1891-'92—Program of courses of Study in the various Departments of the Institute—Library—Technical Museum—The Thrift—New Department of Agriculture—Alliance with Prang Educational Company for promotion of art industrial knowledge throughout the United States—List of Officials and Instructors 1890-'91.

Drexel Institute of Art, Science, and Industry, Philadelphia, Pennsylvania—Founded by Anthony J. Drexel, Esq.—James MacAlister, LL.D., appointed president in 1890—The Opening Ceremonies attending the presentation of the deeds of gift to the Trustees, December 17, 1891, as reported in the Philadelphia Ledger, New York Tribune, and other leading journals—A distinguished representative audience—Prayer by Bishop Potter—Dedicatory address by Hon. Chauncey M. Depew, LL.D.—Address by Hon. Wayne MacVeagh, Ex-Attorney-General of the United States, speaking for Mr. Drexel, and formally delivering the deeds—Address by President MacAlister in response for the Trustees—Benediction by Bishop Whitaker—The Preliminary Circular forecasting the educational plans of the Institute—A visit to the Institute in June, 1892—Departments already opened—The Building—The Library—Interesting collection of MSS. presented by Mr. George W. Childs—The Museum—Valuable collections already secured—Touching memorial art collection to Mrs. Drexel begun by Mrs. Paul in memory of her mother—List of Officials 1891-'92.

COOPER UNION, NEW YORK CITY.

It seems proper to preface the account of The Free Night Schools of Science and Art of the Cooper Union, which would here follow in due order, with a statement of the origin and purpose of this comprehensive Institution, the creation and gift of the noble hearted, sagacious man whose death in 1883, at an advanced age, was mourned as a loss to the world. His fellow citizens, by the action of organized bodies and through the public press, everywhere paid deserved tributes to his memory.

The history of the life and career of Peter Cooper, who was born in the city of New York, on the 12th of February, 1791, and died April 4th, 1883, suggests, in many respects, that of Benjamin Franklin.

Like Franklin, he was a practical mechanic, and the builder of his own fortunes; like him, also, he was ever an eager investigator of Nature, and an energetic promotor of new applications of Science to Industry; like him, too, his mental horizon was in no sense narrow or

contracted, and, like him, he sought to aid, in every way, the dissemination of intelligence among his fellow workers, and to develop habits of industry and thrift; like him, he was an earnest patriot. Both were typical Americans, and would hardly have been developed in any other land.

At the monthly meeting of the Union League Club, in New York, held May 10th, 1883—the meeting next subsequent to his death, a series of memorial resolutions were passed, which show a just comprehension of his character and form a remarkable tribute to his memory from so distinguished a body of his fellow citizens as compose the membership of that historic club.

As succinctly summarizing his qualities and career, and, as showing the estimate held of the value to the Community of the Institution he founded, these resolutions are here given.

The Resolutions were read by George B. Butler, Esq., in behalf of the committee previously appointed to prepare them, and were adopted by the Club. They were as follows:

“The Union League Club has a mournful duty to perform in noticing the death of Peter Cooper, which took place on the 4th of last month from pneumonia. He was admitted to membership in the club in March, 1864. In January, 1881, he was unanimously elected an honorary member, and so continued until his death. In the nineteen years and upward of his connection with it, he was for ten of them a vice-president, and for part of the time first vice-president.

It was during the war of the Rebellion that he became a member. Immediately after the return of peace he illustrated one of his principal tendencies by acting as one of a committee of the club to urge that education through the action of Congress should be conferred on those in the South who as a result of the conflict had been suddenly elevated from the condition of a chattel to that of a citizen armed with the suffrage. Throughout his course he endeared himself to his fellow-members, who now unite in warm commendation of his life and history.

In National, State and Municipal affairs, he took a most active, decisive and valuable part in favor of reform. It was ever his opinion, frequently expressed, that it was one of the tests of good citizenship here, where there are no hereditary and trained authorities, to be vigilant in support of good government.

Although throughout his career he declared his entire confidence “in the ability of men to establish and maintain self-government, he expressed solicitude as to the future, owing to the immense immigration into the United States, and the difficulty of safe absorption, so long as the right of voting may be acquired after only five years of residence.

But his most conspicuous example of service was the establishment of the Cooper Institute.

When he first came upon the stage England had in full operation a gigantic scheme of charities the practical operation of which in a tendency to beget pauperism and degradation, was after long experience fully developed; so much so that in an article on the subject in an early edition of the Encyclopedia Britannica it is stated that a provision for the benefit of bastard children had induced people well-to-do in the world and eligible for marriage to refuse to marry, in order that through their illegal offspring they might enjoy that provision. Peter Cooper, although one of the most charitable of men, avoided this danger and with true benevolence established an institution which adds to human employments and wins into the ranks of labor a large class, who might otherwise in the conflicts of indus-

try have been driven into the ranks of those who seek improper help—an institution which, he said, “opens its doors at night and gives free instruction in science in its application to all the useful and necessary purposes of life.”

It is in this aspect that Peter Cooper's services in this matter are to be viewed. The Institute is a direct instrumentality in behalf of good government, and when we reflect how many thousands of our youth, of both sexes, have no such opportunities of instruction, but on the contrary through their ignorance are contributing their energies to the power of the vicious, the necessity for other organizations of the character of the Institute, to be created by individual wealth, is made apparent. Their establishment is the more necessary on account of the refusal by trade unions to allow apprentices to be engaged with the freedom required to absorb and elevate the young of our growing population.

It is unnecessary to furnish a description in detail of the Cooper Institute. Suffice it to say that on its rolls are about 3,500 persons who are now receiving free instruction in some art or industry useful to the public, and that thousands of others, through free lectures delivered publicly in the great hall of the building, are kept well informed of the progress made throughout the world in arts, science and industry, and are thus stimulated to greater activity in the pursuits in which they are engaged.

Peter Cooper as soon as he had acquired the means through a laborious, economical and successful early life, applied himself to the construction of the edifice which now bears his name; sometimes going to the full extent of his means and making up for any probable deficiency by increased exertion in his private pursuits. From the moment of completion of the building until his death, to which time he had expended \$2,000,000, he was engaged in plans for its improved working, and it may be affirmed that the influence of these exertions and his devout life contributed to that happy state of mind which he ever enjoyed, and to his remarkable length of years.

The far-reaching sagacity of Peter Cooper never received a just estimate. The fact that he built the first locomotive ever used in the United States, and that he was earnest and active in establishing the first line of ocean telegraphy between Europe and America, show that he was far in advance of the intellects of that period. The great future of this country in spreading lines of telegraph and of internal railroad communication over its whole extent was doubtless thus early and conspicuously included in his views. His genius as an inventor contributed largely to his success. In the production and manufacture of iron and in other industries he gave unmistakable proofs of great versatility, foresight, skill and tenacity. If further proof of such sagacity were wanting it is found in the fact that Cooper Institute has been made by its author self-supporting and will therefore endure.

Peter Cooper had no other than a very imperfect common-school education and may be regarded (such was his zeal afterward to enlarge the boundaries of his knowledge) as a remarkable instance of a self-made man. His early days were signalized by a brave and successful struggle to lift himself out of the condition of poverty in which he started. He was unfailing in industry, simple in habits, truthful and just in his dealings, was wisely benevolent and united the qualities of a good citizen, a true patriot and the friend of mankind. He died as he had lived, universally beloved by his countrymen. It is an interesting fact showing the completeness of his life, that only three days before his death he had finished and handed over for publication his autobiography.

In personal character and in the honest acquisition and wise disposal of wealth, Peter Cooper may justly be regarded as the model American citizen.

The Union League Club unanimously recommends that its members unite with their fellow-citizens in contributions for erecting in the inclosed space south of the Cooper Institute, known as Stuyvesant Park, a bronze statue of him, in especial

honor of his memory; that the Executive Committee be requested to obtain his portrait for the gallery of the club, and, further, that this minute be entered in full upon its records and furnished for publication, an engrossed copy to be sent to the family of the deceased.

WILLIAM M. EVARTS, *President*.

DAVID MILLIKEN, *Secretary*.

It is often the case that the men who have proved to be great benefactors of their race, have not been recognized as such till after their decease; this is commonly due to the fact that their philanthropic designs are first made known to the public through the revelations contained in the provisions of a "Last Will and Testament."

In the case of Mr. Cooper it was otherwise, and his later years were gladdened by a knowledge of the successful development of his purposes, as well as by both the public and individual recognition of the value of his great gifts, which were freely extended to him.

One of the most interesting of these occasions took place in commemoration of his Eightieth Birthday, February 12, 1871; on which day he gave an additional sum of \$100,000 to the Institute,—this was first publically announced by the Trustees, on the occasion of the celebration, by the pupils of Cooper Union, of the anniversary of Washington's birthday. At the annual commencement of that year, May 31st the graduates and students of the Institute he has founded presented him with a congratulatory address which, as they said, was "to commemorate both the Eightieth anniversary of your birth, and the gift, whereby you made that day memorable."

His reply, was a recital of the result of his life experience, in which he stated that he was early impressed with the evils of intemperance, dissipation and debt, and resolved to avoid them. This he found it comparatively easy to do, but such opportunities for the acquisition of the learning he desired were then so limited, and it was so difficult for him to find adequate means for obtaining such knowledge as he thought indispensable to his advancement, that he early resolved, if he was ever able to do so, to found an institution which should freely offer such opportunities to deserving youth. This purpose, "never lost sight of during a business career of sixty years," had resulted in the "Union," and in the cheering circumstances and incidents of the present occasion. He expressly stated the active interest taken in his plans by his wife and children. He urged, in this connection, the importance and value of early marriage "when, *and not before*, the young can see the way clear to a decent and comfortable support."—He enforced the truisms that rich men are but trustees of wealth for the good of their fellow men; that antagonism between rich and poor, employers and workers, is needless and wasteful to the last degree; and that "strikes" and similar forcible measures, only result in suffering to the innocent. In closing he

urged an appeal to arbitration in all cases of a difference of views. He declared his conviction that society is to be ultimately lifted up by the personal virtue of its individual members, and not by combinations seeking to initiate reforms by force; and, finally, he "asks only to be remembered as "one who loved his fellow men."

It was to be expected that those who were thus the direct recipients of his bounty should be ready on all proper occasions, to express their appreciation of what had been done by Mr. Cooper. That such appreciation of his great services to the city and community was by no means limited to this class was apparent in countless ways and on many occasions.

One of the most graceful and significant of these public manifestations, a reception, given in his honor on his Eighty-Fourth Birthday, by the Arcadian Club of New York City, found permanent record in a beautifully printed pamphlet, "issued for private distribution" and illustrated by a portrait of "Peter Cooper, Age 83. Drawn and engraved by pupils of Cooper Union."*

The following list of the names of the officers of the Club and of those composing the "Committee of Arrangements," given on the opening pages of this pamphlet, will show how truly this Club, and this Committee, were representative of the higher life of the metropolis. The Clergy, The Judiciary, The Press, The Bar, The Medical Profession, the Institutions of Learning, The Artists, The Merchants, The Manufacturers, The Bankers, The Railroads, and The Public Officials, were all represented; each by leading and distinguished members.

Thus Literature, Law, and Learning, hand in hand with Art, Industry, and Commerce, vied in paying homage to this private citizen, whose whole life of industry had been devoted to enhancing the welfare of his fellow men, and whose practical sagacity, under the inspiration of his generous purpose, had so successfully wrought out an efficient method of self help for the industrious, energetic and aspiring youth among his fellow countrymen, without regard to their birth, creeds, or circumstances.

Many of those who took prominent part on this occasion have long since ceased from among men.

Whether or not the Club itself survives as a distinctive institution, is unknown to the writer; it would seem that its felicitous name,—redolent of all the charms of art,—was sufficient claim for continuance; but, whatever its later history, by thus connecting itself with the life and work of this noble citizen, it has won the amaranth wreath of undying remembrance and shall live, in memory, gar-

*This is entitled "The Reception of Peter Cooper by the Arcadian Club on His Eighty-Fourth Birthday, February 12, 1874. [Printed for private distribution.] New York. D. Appleton and Company, 549 & 551 Broadway. 1874, Pp. 105."

landed with those fadeless blossoms which, in the opening speech of the evening were so lavishly strewn by the silver tongued orator, before the honored guest of the Club.

The following are the lists referred to :

“THE ARCADIAN CLUB.

OFFICERS FOR 1874.

President—HENRY G. STEBBINS.

Vice President—ANDREW C. WHEELER.

Recording Secretary—THOMAS J. HALL.

Corresponding Secretary—T. E. BAKER.

Treasurer—HENRY CLEWS.

Executive Council—Henry G. Stebbins, Geo. W. Hows, A. C. Wheeler, Thos. J. Hall, Henry Clews, Mark Smith, J. M. Bundy, Charles Watrous, H. Millard, E. Moran, Myron A. Cooney, T. E. Baker, Charles Gaylor, L. Israels, H. D. Palmer, Albert Weber, Algernon S. Sullivan, B. F. Reinhart, J. R. Thomas, Thomas Le Clear, G. W. Carleton.”

“Committee of Arrangement—Algernon S. Sullivan, *Chairman*. Park Godwin, Edwards Pierrepont, Jno. R. Brady, Sidney Webster, Wm. H. Vanderbilt, R. Ogden Doremus, Lloyd Aspinwall, B. F. Reinhart, A. C. Wheeler, Albert Weber, Charles Gaylor, Harrison Willard, Frederick G. Gedney, Douglas Campbell, M. Diefendorf, M. A. Cooney, Jno. M. Lewis, W. M. Soper, J. B. Polk, James W. Tooley, Charles Watrous, R. B. Roosevelt, Clarence Seward, J. B. Scribner, Benj. K. Phelps, Jas. F. Ruggles, Geo. W. Carleton, E. Moran, Geo. W. Hows, Thos. J. Hall, Thos. Le Clear, J. M. Bundy, L. Israels, J. R. Garland, T. E. Baker, H. D. Palmer, E. Agramonte, C. A. Welles, P. S. Gilmore, N. Monachesi.”

The correspondence between the “Committee of Invitation”—Messrs. George W. Hows, Algernon S. Sullivan, and George W. Carleton, and Mr. Cooper, bears date in August, 1873. The coming reception to be held February 12th, 1874, was duly announced by the president of the Club, the late Hon. Henry G. Stebbins, M. C.

A brilliant company of the leading citizens of New York had assembled to do honor to the occasion. A collection of examples selected from the work of the several drawing and art classes of the Institute, hung upon the walls.*

*The following programmes show the character of the Reception:

“ARCADIAN CLUB.

[February 12, 1874.]

Programme for the Reception to Mr. Peter Cooper, on the Eighty-fourth Anniversary of his Birthday.

At half-past 8 o'clock, Introduction of Mr. Cooper,
By Algernon S. Sullivan.

Address by Henry G. Stebbins.

Ode, written for the occasion by Mrs. Mary B. Dodge, read by Charles Roberts, Jr.

Response by Mr. Cooper.

Congratulatory Address by Pupils and Graduates of Cooper Institute.

Mr. Algernon S. Sullivan, with a few well chosen words gracefully presented their venerable guest to the President.

The President, after announcing the purpose of those assembling, briefly recited the salient events in the long life of Mr. Cooper, those by which he had been closely identified with many of the most remarkable steps in the material development of the age; and gave, in fuller detail, an account of the several features of the great educational Institute which he had founded.

From Mr. Cooper's reply the following notable auto-biographical paragraphs are taken.

* * *. "In looking back, however, over my life, I am compelled to make a remark, in which most aged persons will sympathize, and that is, how much I have seen come to pass, and how little I have been able to do in a long career, the cardinal rule of which has been to render some equivalent to society, in some useful form of labor, for each day of my existence.

When I was born, New York contained 33,331 inhabitants. The upper limits of the city were at Chambers Street. Not a single free school, either by day or night,

Addresses in response to the call of the President of the Club.

Speeches by Distinguished Guests."

"Programme of Music.

Duo, Belisario.....Donizetti.

Mr. H. Millard, Mr. Fred Steins.

Ballad, When the Swallows build.

Mr. W. H. Sweet.

Song, A Jolly Good Laugh.

J. R. Thomas.

Song, The Stirrup Cup Arditi.

Mr. W. H. Davis.

Ballad, Across the Sands Millard.

Mr. Millard.

Song, When the Tide comes in.....Millard.

Mr. Steins.

Duo, MarthaFlotow.

Mr. Millard, Mr. Davis.

Accompanists, Geo. W. Colby, E. Agramonte.

Serenade by Dodworth's Band.

[Half-past 11 o'clock.]

1. Fackeltanz, No. 4.....Meyerbeer.

2. Cavatina, Immenso Jehova, from Nabuco... Verdi.

3. Waltz, Artist's Life.....Strauss.

4. Selections, from La Fille de Mad. Angot.....Lecocq.

5. Finale, "The Union," North, South, East, and West.....Dodworth.

The Art Contributions are by Pupils of the Cooper Institute."

existed. General Washington had just entered upon his first term as President of the United States, the whole annual expenditure of which did not exceed \$2,500,000, being about sixty cents per head of the population. Not a single steam-engine had yet been built or erected on the American Continent; and the people were clad in homespun, and were characterized by the simple virtues and habits which are usually associated with that primitive garb. I need not tell you what the country now is, and what the habits and the garments of its people now are, or that the expenditure, *per capita*, of the General Government has increased fifteen-fold. But I have witnessed and taken a deep interest in every step of the marvelous development and progress which have characterized this century beyond all the centuries which have gone before.

Measured by the achievements of the years I have seen, I am one of the oldest men who have ever lived; but I do not feel old, and I propose to give the recipe by which I have preserved my youth.

I have always given a friendly welcome to new ideas, and I have endeavored not to feel too old to learn—and thus, though I stand here with the snows of so many winters upon my head, my faith in human nature, my belief in the progress of man to a better social condition, and especially my trust in the ability of men to establish and maintain self-government, are as fresh and as young as when I began to travel the path of life.

While I have always recognized that the object of business is to make money in an honorable manner, I have endeavored to remember that the object of life is to do good. Hence I have been ready to engage in all new enterprises, and without incurring debt, to risk the means which I had acquired in their promotion, provided they seemed to me calculated to advance the general good. This will account for my early attempt to perfect the steam-engine, for my attempt to construct the first American locomotive, for my connection with the telegraph in a course of efforts to unite our country with the European world, and for my recent efforts to solve the problem of economical steam-navigation on the canals; to all of which you have so kindly referred.

It happens to but few men to change the current of human progress, as it did to Watt, to Fulton, to Stephenson, and to Morse; but most men may be ready to welcome laborers to a new field of usefulness, and to clear the road for their progress.

This I have tried to do, as well in the perfecting and execution of their ideas, as in making such provision as my means have permitted for the proper education of the young mechanics and citizens of my native city, in order to fit them for the reception of new ideas, social, mechanical, and scientific; hoping thus to economize and expand the intellectual as well as the physical forces, and provide a larger fund for distribution among the various classes which necessarily make up the total of society.

I feel that Nature has provided bountifully for the wants of all men, and that we need only knowledge, scientific, political, and religious, and self-control, in order to eradicate the evils under which society has suffered in all ages. Let me say, then, in conclusion, that my experience of life has not dimmed my hopes for humanity; that my sun is not setting in clouds and darkness; but is going down cheerfully in a clear firmament lighted up by the glory of God, who should always be venerated and loved, as the infinite source and fountain of all Light, Life, Power, Wisdom, and Goodness."

Addresses and remarks were then made by other distinguished speakers—By Hon. Charles P. Daly, Judge of the Court of Common Pleas; by Dr. McCosh, President of Princeton College, New Jersey, speaking as he said in the name of that college;—by the Very Rever-

end Wm. Quinn, Vicar-General; by Mr. D. H. Ives, for the graduates and former students of the Cooper Union, and by Mr. Fitzgerald, for the present students; these last speakers were accompanied by delegations from their respective bodies of past and present students; they were followed by the Hon. L. B. Woodruff, Judge of the U. S. Circuit Court. Some of the later addresses were evidently extempore, the first of these was by Hon. Andrew D. White, President of Cornell University, who was followed by the venerable poet Wm. Cullen Bryant, himself an octogenarian. John E. Parsons, Esq., one of the Trustees of the Cooper Union, spoke briefly, fully endorsing Dr. McCosh's statements as to the great amount of voluntary personal labor and supervision which had been done by Mr. Cooper in his zeal for the Institute.

Dr. Deems, pastor of the Church of the Strangers, being called on made the closing address of the evening.—Letters from President Noah Porter, of Yale, and President Eliot, of Harvard, were read. An ode written by Mrs. Mary B. Dodge, and read by Mr. Charles Roberts, Jr., and a short poem by Hugh McKay, read by Dr. Zachos, varied the proceedings.

Forty pages of the pamphlet are given to a reprint of the editorials concerning this reception which appeared in leading City Journals. These are from the N. Y. Daily Graphic,—N. Y. Evening Mail,—N. Y. Evening Express,—The Evangelist,—The Jewish Messenger,—N. Y. Times,—and the N. Y. Herald. The last three pages of the pamphlet are given to a catalogue of the Drawings shown. All these addresses and editorials abound with wise and good sayings and the temptations to frequent quotation is well nigh irresistible; but we must be content to take from the addresses, only the scholarly words of President White, and a few paragraphs from the thoughtful suggestions by Dr. Deems, and from the editorials, the account of this special occasion from the Evening Mail, and the graphic description of the schools, given by the writer in the New York Times. These extracts portray the character of the man to whom this unusual honor was paid, describe the occasion itself, and show the varied usefulness of the schools founded by Mr. Cooper.

President White said :

“ Mr. Chairman :

When your summons reached me just now I was renewing an old college friendship with one of your members whose verse we have all enjoyed—Mr. Edmund C. Stedman. Among you, too, I note another friend of those old days, Mr. Phelps,* your vigorous District Attorney, and I may be permitted to say that this festival to-night is the culmination of the first philosophic studies of all three of us—ending most auspiciously what was begun most unsatisfactorily.

For the first duty which we three undertook together as classmates was a study of the charms and glories of old age, and under the guidance of the greatest of philosophic orators, no less a personage than Cicero himself.

* These three were classmates at Yale, in the class of 1853.—EDITOR.

While in that study we gave a tacit admission to the arguments of the treatise *De Senectute*, I am quite sure that we felt in our hearts that the great orator had not made out his case. There were admirable arguments to show that old age is to be longed for and loved, to prove that it is the most delightful part of life, the best worth having, the only part on earth worthy of man's highest condition—still we remained unconvinced. Nor do I think that anyone ever rose from that book convinced of any such beauty and desirableness in old age.

Possibly, in our own case, the matter was made worse by a tutor who thought far more of expounding Zumpt's grammar than Cicero's philosophy; but certain it is that after this study we turned all the more eagerly to the pursuits of youth, and determined all the more resolutely to keep out of our thoughts old age and all its belongings.

But what the orator and philosopher could not impart now stands clearly revealed to us. After what we have seen this evening, old age puts on a very different appearance. In this eighty-fourth birthday of our friend are a beauty and a joy such as the great Roman never depicted.

The secret of this revelation is not hard to find. I remember gaining an inkling of it some years since, as I read that famous correspondence between Thomas Jefferson and John Adams as they approached the end of life—a noble, long life that it was to both of them.

In one of his letters Jefferson says: "I sometimes look back over my life to see if the world is any better for my having lived in it." He then names two or three things which he has done—his efforts for education being especially prominent—and the remembrance seems to throw a cheerful light over him which is reflected upon his correspondent.

In that letter you have an inkling of the revelation which the great Roman, with all his powers of thought, never made.

And that revelation is completed for us to-night by these tributes to our friend Mr. Cooper. Most nobly, most thoroughly, does this high festival teach us the secret of a happy old age. All those ancient arguments mainly resolve themselves into Epicureanism or Stoicism, in various grades, and are unsatisfactory; but our friend has demonstrated that a happy old age is to be obtained by a life devoted to the good of his fellow-men: thereby has he kept happiness aglow within his own heart and soul; thereby has he radiated it upon all about him. He has revealed the secret, he has taught the lesson.

And now, in behalf of an institution one part of which is devoted to technological studies, in behalf of its trustees, its faculty, its students, as truly as if I bore in my hand their credentials, most heartily do I congratulate you, Mr. Cooper, upon this anniversary and wish you many returns of this happy day."

Dr. Deems on being called on, said:

"Mr. Cooper, Mr. President, and Gentlemen: I make no apology whatever for want of preparation, as you see that this is an entirely unexpected call, and as, since the first day I saw the man and saw what manner of a man he was, and what was the life he was leading in this great city and growing country, there has never been an hour of the day that if stopped in my business or pleasure, nor any hour of the night that if roused from my slumbers, to speak on this theme, I should not have been ready to say, "Long live Peter Cooper."

Mr. Cooper has lived long, and lived well. He has contributed, as every good citizen has, his share to the upbuilding of New York and the United States. And his share has been much larger than that of most of his fellow-citizens. In addition to that, he has made specific contributions to the public good which will place his name high on the roll of those who love their fellow-men. Notably among these is the Cooper Institute.

Every stranger who visits New York and spends but a day is almost sure to have a look at the Cooper Institute. There it stands, covering a whole block in that part of New York where space is most costly; there it stands, as ugly as it is huge; but it is huge, and it cost a great deal of money, and all that money was given by one man, and he began life poor. That is the first thing which occurs to a stranger on a mere superficial glance at the building, which will always bear the name of Arcadia's honored guest to-night.

But there is something in the Cooper Institute much better than the stone and iron and glass and wood of which it is built. It is the *idea* of the Institute; the idea of free founts of learning to those who can and will drink thereof; the idea of culture; the idea of the lifting of the mass by the elevation of the individual; the idea of "first the natural and then the spiritual;" of the material being made for the spiritual, and not the spiritual for the material. *This* contribution of Mr. Cooper to the world can never die. It will live in history, it will live in development, it will live in transmission. The men and women of this generation will hand it down to the next. It is an ideal realized, and realized in such a fashion that it shall stimulate thousands of keen intellects to the task of searching for the unseen and eternal ideal in the seen and temporary real. The external edifice of the Cooper Institute will perish. Stone by stone will wear away, and timber by timber will decay, but the Cooper Institute in its ideal will remain to aid in the perpetual enforcement of the fundamental truth, that the things which are seen are temporary, and the things which are not seen are eternal.

But there is something beyond the costly building and the visible and very fruitful institution which Mr. Cooper has planned and equipped and endowed and managed, something better than all that which he has given to the country and to the world, and that better thing is—Peter Cooper!

For there is nothing better than a man—a real, genuine man, that deserves to be called a man. In nothing are there so many possibilities. Mr. Cooper has done many things. The Cooper Institute is only one of them. It is not necessary to go into detail. The man sums up all that he is, and all that he does, and all that he suggests, and all that he excites to be done. The very mention of the name of Peter Cooper will hereafter read several lessons to the world at once.

It will show the value of character as being superior to that of genius, and a good life as being better than gold.

The two things young Americans have most worshipped have been genius and money. Brilliant intellect and a great fortune have been the most coveted of all things.

Mr. Cooper has taught his young countrymen, of the present and of succeeding generations, that a very grand life can be led without genius. Those who reverence him most and love him most do not claim any thing from him in that line. I do not know that he is reported to have ever said or done a very brilliant thing. But he *has* said and done so very great many very good, very sensible, very simply-wise things, that his life has been a very great success, both in usefulness to others and honor to himself. It has lacked all resemblance to the brilliant electric flashes of the storm, but it has never ceased to be like the steady light of a fixed luminary.

By some, great wealth has been coveted because it gave men wine, and women, and horses, and the means of living a gay life. We have lately had several lessons on the insufficiency of these things to afford real pleasure, and all men always knew that they never imparted dignity to a life. Others have sought money for the power it gave them while living, and because of their longing to leave their families rich.

Others have cherished a secret plan of leaving a vast amount for some charity when they had gone the way of all the earth. Such men were Stephen Girard, of Philadelphia, and Johns Hopkins, of Baltimore. That was not bad. But Mr.

Cooper has shown a better way. In the fullness of his power, before he was an old man, he planted a tree which he might nurse and tend, and see attain a growth that promised long life, and the production of the seeds of a hundred other trees. And God has mercifully permitted him to live to behold this desire of his heart. In no other way could he probably have had so much genuine, manly, ennobling pleasure out of his money. Other rich men have taken notice hereof, and are going and doing likewise. May his blessed example be potent for generations!" * * *

The following is the account given in The Evening Mail.

"THE ARCADIAN RECEPTION.

Never, perhaps, in the course of Mr. Cooper's long and active life has he seen under one roof, certainly not in the present generation have been gathered together in this city, so many men remarkable for intellect or worth, as met last night in the parlors of the Arcadian Club to greet Mr. Cooper on his eighty-fourth birthday, and to do him honor. Almost every man of mark in every profession and walk of life in New York, and many distinguished men from a distance, were present. The Bar was represented by such men as Judge Daly, Judge Brady, Judge Robinson, and E. W. Stoughton; the Church, by such men as Rev. Dr. McCosh, Dr. Osgood, Rev. Father Quinn, Rev. Father Farrell, Dr. Deems, and Dr. Chapin; the Press, by Whitelaw Reid, Erastus Brooks, Joseph Howard, jr., and J. M. Bundy; Art, by S. R. Gifford, Constant Meyer, James Beard, and B. F. Rhinehardt; from our mercantile circles were Royal Phelps, R. L. Stuart, George Opdyke, William E. Dodge, Moses Taylor, and many others; Literature was represented by William C. Bryant, E. C. Stedman, Bret Harte, and James Parton; Science, by Prof. Youmans, Prof. Botta, and Dr. Doremus; Education, by President White, of Cornell, President Barnard, of Columbia, Prof. Vermilye, and W. H. Neilson, President of the Board of Education. The city was represented by Mayor Havemeyer; the Army by General Cullum, and humanity by Henry Bergh.

The reception parlors on the first floor of the club-house were quietly and tastefully decorated with evergreens. Over the raised platform in the middle parlor were the dates 1791-1874, between which, and under the monogram P. C., hung an admirable portrait of Mr. Cooper, by B. F. Rhinehardt.

On the walls were hung many specimens of the drawings of the pupils of the free classes of Cooper Union, kindly loaned to the club for the occasion by that institution.

The short but touching speech of Mr. Bryant was one of the most interesting and pleasant features of the evening. It was full of feeling and affection for the old and faithful friend, his fellow-octogenarian whom he addressed, and whose hand, before stepping upon the platform, he so cordially pressed. It was the kindly tribute of one honest, noble old man to another as honest and noble; and the clasp of the hand, the almost mingling of the white hairs of beard and head as they spoke, and their flushed and moved faces, made a beautiful picture of man's *true* humanity to man which, those who had the good fortune to witness it, will not soon forget.

After the address had been delivered, Mr. Harrison Millard, Mr. Frank Bartlett, Mr. J. R. Thomas, and other gentlemen, sang several songs to the accompaniment of Signor Agramonte, and Dodworth's full band gave a serenade in front of the club-house at half-past eleven. The musical part of the programme was quite as fully enjoyed as the intellectual, and the whole evening was one in every way satisfactory to the authors and recipients of a well-merited tribute to a well-spent life.

We give below an imperfect list of those who participated in the exercises of the evening:

Ex-Mayor Gunther, S. L. M. Barlow, E. C. Stedman, Jas. Moir, Charles Watrous, Prof. Vermilye, Howard Rogers, Roy Wilton, Alfred Sullivan, Chas. Roosevelt,

Judge Lawrence, Gen. Cullum, U. S. A., Jas. M. Brown, B. F. Rhinehardt, Charles Gaylor, Judge Charles P. Daly, Rev. Father Quinn, Abram S. Hewitt, Prof. Draper, A. T. Conklin, William J. Florence, J. M. Bundy, Robert L. Stuart, Dr. W. H. White, Prof. Youmans, Ralph W. Booth, Jr., Ex. Gov. E. D. Morgan, Rev. Dr. McGlinn, Rev. N. O. Murray, D. D. Telford, Wm. Magarath, Homer Nelson, Chas. O'Connor, Ex-Mayor Geo. Opdyke, Rev. Dr. Osgood, W. H. Neilson, President Board of Education, Pres. Barnard, Columbia College, Henry Bergh, Bret Harte, Mayor Have-meyer, Jos. Howard, Jr., Robert Johnston, Prof. Henry Drisler, Moses Taylor, Judge J. R. Brady, Gen. Lloyd Aspinwall, James Beard, Courtland Meyer, Wm. Cullen Bryant, Dr. E. H. Chapin, Mayor Hunter, of Brooklyn, Dr. H. D. Ranney, John T. Daly, Rev. Dr. H. M. Field, J. W. Simonton, Hon. William Orton, Royal Phelps, Rev. Dr. S. Irenæus Prime, Frank Bartlett, James Parton, Benj. F. Beekman, G. P. Quackenbos, Judge Robinson, Rev. Dr. Deems, Hon. Erastus Brooks, Hon. William E. Dodge, Rev. Dr. Armitage, Frank Kernan, E. W. Stoughton, Prof. Vincenzo Botta, Frederick G. Gedney, Andrew H. Green, Judge Edwards Pierrepont, Frederick De Peyster, President Historical Society, Charles Butler, Clark Bell, William Keltz, Hon. S. B. H. Vance, President of the Board of Aldermen, Hon. R. B. Roosevelt, O. P. C. Billings, Whitelaw Reid, Judge Woodruff, Ex-Mayor Tiemann, Ezra B. Cornell, George Simpson, J. R. Thomas, Menzo Diefendorf, F. F. Mackay, Dr. J. B. F. Walker, George M. Van Nort, Joseph H. Choate, Gen. Alexander S. Webb, President of College of the City of New York, Albert Weber, John A. Nichols, Hon. D. W. Judd, George W. Clarke, R. Swayne Gifford, Gen. Rufus Ingalls, A. A. Low, John E. De Witt, Elliott C. Cowdin, Judge Peabody, John Swinton, W. A. Ogden Hegeman,"

The article in the N. Y. Times describing in detail the several schools and classes of the Institute begins thus:

"THE COOPER INSTITUTE SCHOOLS.

It is a pleasant sight to see good old Peter Cooper come upon the platform at any public meeting where the welfare of the city or the country at large makes his presence serviceable. Immediately there goes up such a shout of welcome as is vouchsafed to few men. It cannot be doubted that in every large public assembly there must be hundreds present whom Peter Cooper never saw, but who are personally indebted to him for the prosperity and success of their lives. But if what he has done were to be thoroughly understood throughout the land, there would hardly be a single home where he would not be blessed and prayed for in the devotions of the family. By his introduction of a grand technical school, on the broadest possible base, he has counteracted that injurious tendency of our public-school system to educate our youth above their hands but not up to their heads. He has anew made true for Americans the apothegm that "labor is honorable." The financial excesses consequent upon a great war, the easy and abundant flow of a fallacious currency medium, the dazzling extravagance of many adventurers, the pleasant paths of political advancement, all tended to make young men disbelieve in the wisdom of their ancestors. From all the examples that were spread before their eyes it certainly seemed that labor was a folly, beneath the attention of intelligent minds, and that the sure and only methods of advancement consisted in an ability to dress well, a capacity for drinking deeply, and a knack of stringing sentences together. These *moyens*, as the French have it, were certain to procure for the happy possessor either a position as clerk in a bank, or as the friend of a rising politician, or, failing these, the hand of some wealthy girl. That those who have no abilities should believe this doctrine is more dangerous for themselves than a source of loss to the world at large. But the course of men of real talent should be led astray by some flagrant examples of evil prosperity was a real misfortune. And,

unfortunately, in all that is learned in our public schools there is nothing to deter, but much to foster, a mistaken view of life. The word *education* is one that expresses the speaker's meaning, and that of nobody else. There is, perhaps, but one word that will adequately render the idea of what is gained by our public-school system. That word is *learning*. In one of those pleasant apologues of Addison, in the *Spectator*, a dreamer of moral philosophy dreams that he has before him, in a material shape, that constellation known as the Balance, or *Libra*. He weighs in it various qualities and worldly gifts, making moral reflections thereon. The fancy seizes his brain to put in one scale learning, and in the other mother-wit, and he finds the former so light in comparison that it has no perceptible weight. But when placed in the same scale with mother-wit it increases the weight of the latter one hundred times. It is exactly so with what is taught in the public-school system. By itself it is almost worthless, but, added to real knowledge, it increases the powers of the latter many times. And the Cooper Institute is one of the colleges where real knowledge is taught. Technical schools teach positively, not relatively. And the Cooper Institute is one of the grandest technical schools ever planned by the brain of man. Now, it is the special quality of real knowledge that those who seek after it, no matter what the motive was that initiated the effort, soon learn to love it for itself. And in the Cooper Institute, the young people who come there with a thousand foolish ambitions and desires floating through their imaginations, find these disappearing as rapidly as the mist overhanging a river in the presence of the morning sun. Whether the thing sought be science or art, from the moment that the woman or man commences to work at it in earnest, the temptations held out by successful fraud, and villainy, and vice, become vague, and at last disappear before the charm of the work. To those who have only tinkered in a public school, the fascination of hard work seems an utterly unknown quantity. But a visit to any technical school will give a few fresh ideas on the point. During the past few days, when Labor has been rampant through the streets, and bellowing the poisonous trash of false political prophets, the benches of the Cooper Institute have been filled to overflowing. Hundreds of talented young men who would have been most formidable allies were there, fighting against knotty problems of geometry, knitting their brows and bracing up their nerves in contest against architectural difficulties in the construction of stairways, setting their wits against a little test-tube, containing an unknown substance which defied their powers of chemical analysis; or, in the art alcoves, plodding away at outlines; or, more advanced, striving for a delicacy of touch which should distinguish between shade and shadow; or, still higher on, earnestly endeavoring to compose an entire form into masses of light and shade. Here was fighting indeed; here were brains throbbing and pulses beating of thousands of young people, wrestling, like the patriarch of old, for knowledge from on high, and thrice blessed for the very struggle.

PUBLIC APPRECIATION OF COOPER INSTITUTE.

The Americans are the quickest-witted people under the sun, and very soon found out what incalculable benefits could be derived from the Cooper Institute. The machinists went to learn mechanical drawing, because they knew how it would aid them in a thousand ways. There is not a machine-shop throughout the country where there is not an annual loss of hundreds of dollars because the workmen do not comprehend drawings. And there is not a single machinist who cannot earn much more after he has studied drawing. But if he has a talent for invention, or for adaptation, the power of mechanical drawing is a perfect Godsend. The very last time the writer went through this department there was present a workman, come to say a few words of cheer to the pupils. He had also been a pupil there, had gone to Fitchburg, Mass., and had there invented a patent drill-chuck, for which he had received several thousand dollars. He owned that he never could

have done it if he had not had his wits sharpened by his course of mechanical drawing. Nor is he the only one by any means. Every year there are at least half a dozen men who rise from the ranks of workmen in a similar way. In the Freehand Drawing Department the benches are every night crowded with young carvers, lithographers, jewelers, cabinet makers, and carpenters, who are so engrossed that one may often speak to them and be unheard. They are engaged in studying decorative art, scroll-work, etc., and are surely fitting themselves for higher positions. Then there is the Architectural Department, occupied almost by young stonemasons and carpenters. The subject is a difficult one, intensely practical, and one highly remunerative in a city where all the old men have made at least three forced migrations, and have three times built for themselves a new home. The way the professor teaches them is eminently sound. Every part of a house, from foundation to roof-tree, is built up theoretically. All the decorative part is remodeled, so to speak. The professor takes an ornament, say an acanthus-leaf moulding, divides it, subdivides, traces its alteration in the Renaissance when the restoration of Greek decoration was affected by the preceding Gothic, and shows in what manner new decorations may be formed by combinations or developments of the old. Then there is the drawing from cast and life, frequented by men of all callings who feel within themselves a thrill for art which will not be satisfied by artistic industry, but insists upon art itself. It is plain that this is stepping beyond the bounds of a technical school, as generally understood; but the large-hearted liberality of Peter Cooper knew no limits. Not a few of the young people who have studied in these night-schools are now students in the National Academy of Design, and bid fair to be worthy members of the artistic profession. Then there is the modeling from clay, attended by a very numerous class, whose efforts promise a high degree of future success. Last year there were admitted twenty-one hundred, and this year there is an increase of eleven per cent. And waiting, almost sick with hope, are more than four hundred applicants, watching for the first vacancy. They know perfectly well that this is their one chance of rising in the world, and their eagerness of expectation, and often times piteous letters of entreaty, give some idea of the manner in which these admirable schools are looked upon, and they are seized as the ladder that shall bring the ignorant and miserable up from unknown depths to lives of usefulness and careers of prosperity." * * *

All these evidences of the public estimation of the work and character of this remarkable man are full of interest as showing the profound impression made by his personality, upon a community popularly believed to be unimpressed by such examples; to be, in short, far more concerned with the getting than the giving of wealth. It is not one of the least valuable lessons to be gained from the life and experience of this citizen of New York, that his philanthropic work was so readily appreciated and so cordially endorsed by his fellow citizens. Every such instance of giving and of appreciation, adds to the inducement to others to do likewise. Mr. Cooper, set the sensible example of giving while in the full enjoyment of all his powers, of being the executor of his own charities. His example was nobly emulated by the late Mr. Tulane, of New Orleans, in the endowment of the University which which now bears his name; and has been recently followed by Mr. Charles Pratt, who has founded a grand Institution in the sister City of Brooklyn just opened in 1888, and by another benefactor who bears the same name, Mr. Enoch Pratt,

of Baltimore, who, some years since, founded the free Library in that city. While in December, 1891, as these pages are in the hands of the printer, the formal opening of the noble Institution, to be known hereafter as the Drexel Institute of Philadelphia, founded and generously endowed by Anthony Drexel, Esq., has taken place in the presence of the leading representatives of the civilizing forces of America.

The Governments of the United States, the State of Pennsylvania, and of the city of Philadelphia, the leading Universities, the churches, the learned professions, the press, the great business corporations, and the inventors, were each and all represented by distinguished members of their various bodies whose presence during these brilliant inauguration ceremonies, emphasized the importance of the relations held by such educational enterprises to the whole community. Past ages have glorified the destroyers of mankind. Let us hope the aim of the future will be to enshrine the benefactors of the race.

From the extracts given in these preceding pages the general esteem in which Mr. Cooper was held, and the general purpose he had in the planning of his generous scheme, can be gathered.

It is, however, from a perusal of the pamphlet* containing the "Charter" etc., of the Cooper Union, that the fullest idea is to be gained of the comprehensive purpose of Mr. Cooper, in planning this great instrumentality for the benefit of his fellow citizens.

The act of the Legislature which embodies the "Charter,"—which amended two previous acts passed in 1857,—was passed April 13th, 1859. This act recites the Deed of Trust—by which Mr. Cooper gives to a board of six Trustees the property now known as Cooper Union. This joint deed by Peter Cooper, "and Sarah his wife", was made on the 29th of April 1859 and recorded May 25th 1859.

The "Board of Trustees" thereby created, consisted of himself, his son Hon. Edward Cooper, late Mayor of New York, and his son in law Hon. Abram S. Hewitt, for several terms M. C. from New York City; associated with them were three distinguished citizens, Daniel F. Tieman, Wilson G. Hunt and John E. Parsons; the two first, well known merchants, and the last, an eminent lawyer. The deed provides, that the premises and all income and profits therefrom, "shall be forever devoted to the instruction and improvement of the inhabitants of the United States in practical science and art."

What could be broader than this? Surely there is nothing sectional, or local, in this dedication of private fortune to public use.—There is a provision that the oldest lineal descendant of Peter

* Charter, Trust Deed, and By-Laws of the Cooper Union for the Advancement of Science and Art: with the letter of Peter Cooper, accompanying the Trust Deed. New York: Wm. C. Bryant & Co., Printers, 41 Nassau Street, corner of Liberty. 1859. Pp. 61.

Cooper shall always be one of the Trustees, "*ex gratia*." The specific purposes of the trust are recited—these are omitted here as they are embodied in a report of the Trustees given subsequently.—No mortgages are ever to be placed on the property and the current indebtedness is never to exceed \$5,000.—The several provisions, namely: that directing what action should be taken in the event of partial or entire destruction of the building by fire or otherwise; that for encouraging publicity as to the opportunities afforded by the Union and as to its management; and that for guarding against the possibility that the fact of a person holding any form of religious opinions should be suffered in any way to affect their employment as teachers, or their enjoyment of all privileges, as pupils;—show a wise and comprehensive purpose to secure the perpetuity, the utility, and the freedom for development of the institution.

It is, however, in the letter* transmitting the Deed of Trust, that the benevolence and kindness of Mr. Cooper's character is most charmingly manifested.

This letter fills twelve pages of the pamphlet and is, throughout, an eloquent expression of love to God and good will to man. No one can read that letter, mindful how, for a quarter of a century after it was written, the author continued to give his personal care and means to the work it was written to promote, without feeling that, in one case at least, the title of "philanthropist" was not misapplied.

His wish is, that this institution may aid in developing virtue, intelligence and patriotism.

He expressly desires to aid women to the means of support and makes definite provision to that end; as will be recited in the account of the "Woman's Art School of Cooper Union."

He also expresses his faith in the power for good, wielded by the editors of the public press, and urges the Trustees to secure their potent aid, for the institution.

The opening paragraphs and a few sentences of this letter are here quoted.

[* Letter from Mr. Cooper, accompanying the Trust-Deed.]

To the Trustees of "The Cooper Union for the Advancement of Science and Art."

GENTLEMEN,—It is to me a source of inexpressible pleasure, after so many years of continued effort, to place in your hands the title to all that piece and parcel of land bounded on the west by Fourth avenue, and on the north by Astor place, on the east by Third avenue, and on the south by Seventh street, with all the furniture, rents and income, of every name and nature, to be forever devoted to the advancement of science and art, in their application to the varied and useful purposes of life. * * *

* The printed copy of the letter in the pamphlet of 1859, which is in the Library of the U. S. Bureau of Education, bears the autograph signature of the venerable philanthropist.

My hope is, to place this institution in the hands and under the control of men that will both know and feel the importance of forever devoting it, in the most effectual manner, to the moral, mental and physical improvement of the rising generation.

The following paragraphs illustrate his profound faith in the principles of American Republicanism and his belief in the Unity of the Race.

“Believing that instruction in the science and philosophy of a true republican government, formed, as it should be, of the people and for the people, in all its operations, is suited to the common wants of our nature, and absolutely necessary to preserve and secure the rights and liberties of all; that such a government rightly understood and wisely administered, will most effectually stimulate industry and afford the best means possible to improve and elevate our race, by giving security and value to all forms of human labor; that it is on the right understanding and application of this science based as it is on the golden rule; that eternal principle of truth and justice that unites the individual, the community, the state and the nation in one common purpose and interest binding all to do unto others as they would that others should do unto them: thus deeply impressed with the great importance of instruction in this branch of science, I have provided that it shall be continually taught, as of pre-eminent importance to all the great interests of mankind.

My feelings, my desires, my hopes, embrace humanity throughout the world: and, if it were in my power, I would bring all mankind to see and feel that there is an Almighty power and beauty in goodness. I would gladly show to all, that goodness rises in every possible degree from the smallest act of kindness up to the Infinite of all good. My earnest desire is to make this building and institution contribute in every way possible to unite all in one common effort to improve each and every human being, seeing that we are bound up in one common destiny and by the laws of our being are made dependent for our happiness on the continued acts of kindness we receive from each other.”

He provides for the self government of the pupils, subject to the approval of the Trustees; directs the allotment of a hall for their use, at stated times,—for lectures, the lecturers to be selected by the pupils; and for the use of a society of pupils, organized for purposes of debate; he also suggests plans for the organization and management of this society;—with intent to familiarize the members with such public duties, as citizens of a Republic are liable to be called on to perform. He keeps constantly in view the after life of the pupil as an equal citizen of a free Republic. Recurring to their responsibility in holding this relation, he says:

“Under a deep sense of the responsibility that rests on us, as a people, entrusted, as we are, with the greatest blessings that ever fell to the lot of man—the glorious yet fearful power of framing and carrying on the government of our choice—it becomes us to remember that this government will be good or evil in proportion as the people of our country become virtuous or vicious. * * * I trust that the students of this institution will do something to bear back the mighty torrent of evils now pressing on the world. I trust that here they will learn to overcome the evils of life with kindness and affection. I trust that here they will find that all true greatness consists in using all the powers they possess to do unto others as they would that others should do unto them; and in this way to become really great by becoming the servant of all.

These great blessings that have fallen to our lot as a people, are entrusted to our care for ourselves and for our posterity, and for the encouraging of suffering humanity throughout the world.

Feeling this great responsibility, I desire, by all that I can say and by all that I can do, to awaken in the minds of the rising generation an undying thirst for knowledge and *virtue*, in order that they may be able, by wise and honorable measures, to preserve the liberties we enjoy."

The closing passages of his letter, while carefully providing against any admission of religious intolerance within the institution he is founding, embody a clear statement of his own religious beliefs, in which he avows a high ideal of christianity.

He ends thus:

"The life and teachings of Christ, showing God a father and the world of mankind our brethren, must forever stand pre-eminent over all forms of instruction, either ancient or modern. The loving spirit and principle that Christ manifested in *his* life and in his death, is the spirit that must finally reform the world, in the day when religion shall consist in the right actions and motives of our life, instead of a mere belief in the antiquated opinions of erring men. It was his gentle spirit—the spirit of an all-embracing charity—that went about the world, overcoming the evils of life with continued demonstrations of kindness and affection, that showed all that it is our privilege as well as duty to follow his example and obey his precepts. It was this spirit that was in the world, and the world knew it not. It is still in the world, and it is our unhappiness that we know and feel so little of its influence on our hearts and lives. By following his precepts and example we cannot fail of a happy and useful life, a peaceful death, and a blessed immortality. I trust the time will come when religion will be divorced from superstition, and the light of science will develop the laws and methods of Deity, showing a great and glorious purpose shining through all the wonders of Almighty power, by which knowledge shall cover the earth as the waters cover the great deep, when men shall know and understand the things on which their happiness depends. We shall then comprehend something of the heights and depths, and lengths and breadths of that knowledge and love of God which passes all understanding.

I have now placed in your hands the entire charge and property of this institution, and in order to further aid and facilitate the objects and purposes designed to be secured, I hereby authorize the Board of Control to draw on me at their pleasure, for the sum of ten thousand dollars as fast as the same can be wisely used to advance the interests of this institution.

Please accept my heartfelt assurance of sincere desire that under your care thousands of the youth of our country may throng its halls to learn those lessons of wisdom so much needed to guide the inexperience of youth amidst the dangers to which they are at all times exposed."

It thus clearly appears that Mr. Cooper had for his institution a far higher ideal than that of a mere technical school of the industrial arts and sciences: he seeks to develop character—the highest manhood and womanhood, as well as to give mental training and manipulative skill.

The greater includes the less. He would have the working men and women so instructed in useful knowledge as to be fitted to support themselves, thus being truly independent; but, while securing the means of obtaining this elementary knowledge and technical training, he seeks, also, to provide for their "nobler needs;" more-

over, since they are to be citizens of a Republic, he would have them know their responsibilities and become familiarized with their duties *as* citizens. His letter admirably enunciates the principles which should underlie every plan for the public education of a free people. To what better preparation, for life and for their civic duties, can the free citizens of a Republic hope to attain, than to be thus taught the elements of science and art, to be trained in some productive industry, and to be given an intelligent comprehension of the principles and methods of their own form of government, while being also instructed in their duties to their fellow men; taught to be honest, virtuous, courageous in defense of their civic rights and just in their public, as well as private actions.

What a contrast does this ideal present with those narrow views which would limit public education to the most elementary instruction, to the barest and lowest needs. In some cases, where individual or corporate manufacturers have instituted technical schools for their apprentices, it is too apparent that what they seek to do, is, to train better "hands,"—more skillful workmen, not at the same time to develop that manly independence which Mr. Cooper rightly regards as the "*sine qua non*" of a citizen of the Republic, but which these employers show no wish to foster. Docile and serviceable "tools," not equal citizens, are what these manufacturers seek to provide for their purposes.

In a Republic, at least, the education of the people can not safely be left to private interest or to private charity. Admitting for the moment, the force of the argument that it may be no part of the public duty to teach particular professions, or specific trades, or industries; it must, on the other hand, be affirmed that it *is* the plain duty of the public to secure universal education of some sort to its citizens; the amount a given community deems essential, will depend very much upon the civilization and common sense of that community!

Now, by the opening of evening classes for those unable to attend the public schools in the day, the city had relieved the Cooper Union of the need of opening mere elementary night schools for instruction in the simple English studies, just as the opening of free public schools had enabled the society of Mechanics and Tradesmen, to close their primary English schools in the year 1858, and to give all their attention to their drawing classes; so the Cooper Union was able on opening to set a standard of admission both as to age and intelligence, as the following quotation from their first public advertisement in 1859 shows; "The courses given in the Union are intended to impart such instruction only as cannot be got elsewhere by night without charge." The age of sixteen years and such knowledge of the common English studies as could then be acquired in the free night schools, were fixed as conditions of attendance, while admis-

sion to the classes in the higher mathematics depended upon ability to pass a satisfactory examination in the preliminary studies.

This applies to the school of Science but not to the drawing classes ; for, in these last, the Union is still, as lately at least as 1880, forced to do much of preparatory work, which should be done in the public day schools and evening classes ; while there seems no good reason why the work of the normal classes of the Union, in training drawing teachers for the public schools, should not, in New York, as it is in Massachusetts, be done, by the public in "Normal Art Schools ;" for it is clear that no private institution can begin to supply the demand for trained instructors to teach and superintend the work of the teachers of the public schools ; if industrial drawing is to be thoroughly taught in all the public schools of the city and State of New York.

If the public system of instruction provided these instrumentalities, for which no private institution is competent to provide, or ought to be called upon to do so, the Trustees of this noble benefaction of Mr. Cooper could devote all its resources to the technical training of workers in the arts and sciences, to the great advantage of the Art Industries of the Country.

In evidence of the inadequency of any private undertaking to meet the public need, is the fact that, during Mr. Cooper's lifetime, the growth of the schools so pressed upon their facilities that possession of the upper part of the great building, which had been leased to a Banknote company for a term years, for the sake of the income, was secured long before the expiration of the lease, and was then wholly given to the uses of the schools ; but this additional room soon proving inadequate, an additional story was then erected by Mr. Cooper, enlarging the building to one of six stories.

It was not until the year 1854 that the long brooded plan of Mr. Cooper, reached the stage of practical development, when the corner stone of the great building was laid. It was on the 29th of April 1859, that the Deed of Trust was executed and the completed building was formally transferred to the Board of Trustees, who had been selected by Mr. Cooper in accordance with the provisions of the Charter and amended Act of Incorporation, as passed by the Legislature, April 13th, 1859.

Before proceeding to trace by means of the annual reports of the Trustees, Curator and Instructors, the development and success of the Institute, it may be profitable to seek for a moment the causes which led this City-born and bred boy, in his early youth, to the conception of such a comprehensive, far reaching and ennobling undertaking. The account, which in advanced age the venerable philanthropist gave, from time to time, in friendly confidences to his children the pupils of the institute, recalls the classic races of the torch bearers, so often used to illustrate the transmission of the lights of literature, art and civilization, from age to age.

This statement is first recorded in the report of the incidents attending the graduation of the first class, five years after the opening of the Free Night Schools; but the fullest version and the one here quoted, is given in the Fifteenth Annual Report of the Trustees, as an extract from Mr. Cooper's address to the graduates the year before, it is as follows:

"It is now nineteen years since the corner stone of this building was laid. With that stone, there was buried a scroll, inscribed with the following sentiment:

'The great object that I desire to accomplish by the erection of this Institution is to open the avenues of scientific knowledge to the youth of our City and Country, and so unfold the volume of nature that the young may see the beauties of creation, enjoy its blessings, and learn to love the Author "from whom cometh every good and every perfect gift.'

It may not be uninteresting, if I state, in a few words, *one* of the prominent incidents that led to the conception of this Institution, and the erection of this building.

It happened, about the year 1828, that I was first elected an Assistant Alderman to represent that part of the City and Island that then extended from Eighth Street, where we now are, to King's Bridge on the Harlem River. While serving in that capacity, I became acquainted with a gentleman who had then lately returned from France. He informed me, that while in Paris, he attended the Polytechnic School. He expressed great admiration for the consummate ability of the Teachers, and the many appliances which they had for illustrating all branches of applied science.

That, which interested me most deeply, was the fact, *that he found hundreds of young men, from all parts of France, who were living on a crust of bread and undergoing great hardships, in order to get the benefit of the lectures, and instruction of that Institution.*

I then recalled the fact how glad I would have been, if I could have found such an institution in my youth in this city, with its doors open to give instruction at night, the only time that I could command for study. And I then reflected upon the fact that there must be a great many young men in this country, situated as I was, who thirsted for the knowledge they could not reach, and would gladly avail themselves of opportunities which they had no money to procure.

I then determined, if ever I could acquire the means I would build such an Institution, as would open its doors at night with a full course of instruction, calculated to enable mechanics to understand both the theory and the most skillful practice of their several trades; so that they could not only apply their labor to the best possible advantage, but enjoy the happiness of acquiring useful knowledge—the purest and most innocent of all sources of enjoyment. By this means, I hoped to contribute to the elevation and the happiness of the industrial classes to which I belonged. Finally, my plan also provided for a School of Art, suited to the wants of females, during the day; with a Reading Room and Library open to both sexes, from eight o'clock in the morning until ten at night."

This day completes the Fourteenth Annual Commencement, with a list of pupils in the classes amounting in all to some 2,500—a greater number than any previous year. For this result I am greatly indebted to the Trustees and the Professors, and to all who have been intrusted with the care of this Institution.

They will have my heartfelt thanks for their faithful labors; but I commend them chiefly to that "reward of a good conscience," that will always bring to the soul.

"A calm sunshine, and the heartfelt joy
That nothing earthly gives, or can destroy."*

It is interesting, in this connection, to recall that it was The Andersonian Institute in Scotland, which suggested the plan of the Franklin Institute in Philadelphia; and also that Mayor Hewitt, son in law of Mr. Cooper, said at the Centennial celebration of the Society of Mechanics and Tradesmen, that Mr. Cooper had first thought of placing his funds under the direction of that Society and that his knowledge of their Library and classes for Apprentices, had largely directed his plans in forming his Institute. Such is the value of a single example.—

The following concise description of the building, erected by Mr. Cooper in fulfilment of the 'plan' just recited, appeared in one of the leading City Journals. It was written some ten years after the first opening of the Institute but before the later changes and describes the building as it was when first opened.—*

The building, built of brown freestone and iron, covers the entire block, bounded by Astor Place and Seventh Street, Third and Fourth avenues, and with the ground cost \$650,000. The whole was conveyed by Mr. Cooper in fee-simple, without reservation of any kind for rents, issues and profits, to the present trustees. The building is five stories in height and fire-proof throughout, having iron beams with brick arches between them, broad staircases of stone, and two open shafts or columns rising from the foundation to the roof, a distance of 123 feet, one for the purpose of ventilation and the other for hoisting goods, by means of a dumb waiter, to the different stories. More than twelve miles of steam-pipe convey heat through the building, and twelve miles of gas-pipe are requisite for its illumination.

Of the five stories three are devoted to educational purposes and divided into lecture rooms and halls. The fifth story is occupied by the American Bank Note Company, and the ground floor and first story by offices, shops, and the Cooper Union Hall. This hall is handsome and commodious, seating twenty-five hundred persons; it is one hundred and twenty-five feet deep, eighty-two wide, and twenty-one high, and is admirably constructed for acoustic effect. With a gradual ascent tier upon tier of arm chairs rise in semi-circles from the platform to the entrance. Although it is below the surface of the street, the hall is well ventilated by means of an immense rotary fan worked by steam, which sends currents of air between the double walls and floors, regulated by registers in a perfect manner. The rents of the offices, shops, and the great Hall, form the chief revenues of the institution, and with the interest of the endowment fund defray its expenses."

It will be seen, from Mr. Coopers statement of his plans, and from the subsequent history of the development of the various educational instrumentalities initiated, or fostered and promoted by the Cooper Union, that, while a knowledge of the fundamental laws of matter, comprised under the terms Mathematics, Physics and Chemistry, was recognized as absolutely essential to the after development of the future inventors, mechanics, architects and engineers, who he hoped might be trained up in the free schools and the great polytechnic institution he sought to found, that Mr. Cooper himself, and the Trustees and Instructors, have been equally aware of the im-

* From an article contributed to the New York Evening Post, over the signature F. E. F.

perative need of thorough training in industrial art drawing; if any practical application of this knowledge was to be attained.

The school of Science was, in fact, so far as this class of pupils were concerned, introductory to the school of Art; and the Woman's School of Design, was to do for girls, what the Night School of Art, did for boys. Under the wise direction first of Mrs. Henry M. Field, and subsequently, after the lamented decease of this revered lady, of Mrs. Susan N. Carter, this school has steadily developed in various artistic directions and has achieved well merited distinction. It is interesting to see among the names of its first pupils those who have since won an enviable place for themselves as art workers and art instructors. Its history in detail is given elsewhere.

The varied art instruction and artistic development of Cooper Union clearly entitle it to a large space in this Report.

The first Report by the Trustees* under date of January 1st, 1860, recites briefly the fact of the transfer of the property to the Trustees, and renders an account of receipts and expenses from May 1st. A small cash balance of rent in the hands of the agent, \$259.26 was paid them and Mr. Cooper authorized them to draw on him, in advance, for any part of \$10,000 which might be needed. He had himself scrupulously refrained from receiving a dollar of income from the building. The total expenditures of this first year are given at \$7,432.50. The Trustees state their plan of arranging the details of the school in accordance with the trust deed and letter of Mr. Cooper.

They reprint the announcement of the opening of the Institute made in the daily newspapers early in October. These included the "School of Design for Females," the "Reading Room and Art Gallery attached," and "The Department of Night Instruction." In this connection they say:

"The result astonished the Trustees. About 2,000 pupils were admitted to the various classes, and on the 2d of November, the institution was opened to the public with a very able address, by Dr. John W. Draper, before the pupils and a large number of intelligent citizens, on the nature and objects of the institution. On the 7th of November the regular instruction commenced, and the reading-room was opened; the privileges of the institution being entirely gratuitous in all its departments. All the instruction, except in the school of design for women, is given at night, commencing at half-past seven o'clock, after which no admission to the lecture-rooms is permitted. The public are freely admitted to the unoccupied seats, and large numbers have availed themselves of the privilege. The instruction is given orally, but each pupil is required to have a text-book, and regular examinations are made either during the lecture or after its close. In the class in chemistry the number of attendants was so great, that it became necessary to adopt a novel expedient in order to carry on the system of examination, which has been attended with the happiest results. The class was divided into eight sec-

*"The First Annual Report of the Trustees of the Cooper Union, for the advancement of Science and Art. January 1, 1860. New York: John F. Trow, Printer, 377 and 379 Broadway corner of White Street. 1860. Pp. 39."

tions. The professor and his assistant examine two of these sections each night in rotation. In the other sections a moderator is chosen, and the pupils examine each other. In this way they not merely gain knowledge, but they learn how to express it. This system is referred to here, because it will be adhered to in all cases where it may be practicable.

The rules and regulations adopted for the government of the institution are few and simple, and the Trustees are happy to report, that they have been found amply sufficient for the purpose, the behavior of both students and visitors having been such as to secure the admiration and thanks of the Trustees.

A table is given, continued in several of the later reports, of the trades, professions and employments, represented by the pupils. Among the pupils of the six classes ninety-three different employments are specified, while quite a number are recorded under the heading of "not specified."—

The plan of Mr. Cooper, comprehended the founding of an advanced polytechnic school, and the organization of "The Society of the Associates of the Cooper Union for the Advancement of Science and Art," to be composed of members of the leading scientific and literary societies and institutions in the City. The Trustees announce that, for the present, the Polytechnic School cannot be undertaken, they however contemplated sending invitations to the different societies to be represented in the proposed new "Society of Associates." The plan of this society was for an organization like that subsequently adopted by the American Association for the Advancement of Science. It was to comprise one large Association with many subordinate sections each devoted to a special subject. This was not begun by the Union for some years, nor has it achieved the success Mr. Cooper anticipated,—In this first report it is stated that it was partly in view of this coming together of all the several organizations that the name of "Union" was first given to the institution by Mr. Cooper.—

The "Woman's School of Design" which had been founded some years before, and which had been given a home in his building by Mr. Cooper, was opened as a part of the Institute and the lady managers were enrolled among the officers as members of an "Advisory Council." The right of having "pay" as well as free classes was, after some hesitation, awarded to this school. The valuable paintings by old masters which had been collected by Mr. Bryan, since given by him to the N. Y. Historical Society, were hung in a suite of rooms adjoining the reading room and, with some other pictures loaned by other private owners, formed a free picture gallery which was an attraction for many visitors for several years.

The expressions of the Trustees in that first report, concerning both the importance of affording opportunities for obtaining a thorough Technical education, and the demand existing in the City for a public free gallery of art, showed that they were even then fully awake to these needs of the community; for which, however, no adequate

means were provided until some years later, when public interest was so aroused that the public art collections of The New York Historical Society, The Metropolitan Museum of Art, and the Lenox Library, were made accessible; while the Art schools of the National Academy, and of The Art League, were both inviting pupils; and the School of Science of Columbia College, The Industrial Art Schools of The Metropolitan Museum, the Manual Training Classes of the Free College, and similar facilities provided by incorporated bodies, were either first established, or largely developed, under the impulse of the demand by a public that had become somewhat enlightened as to the value of these several instrumentalities.

The two final paragraphs of this report are here quoted as they furnish proof that Mr. Cooper, in founding this Institute, was not impelled thereto by any inordinate personal vanity and did not himself give his own name to the Institute; and, also, they make it evident that, from the very first, he hoped for the coöperation of other benevolent public spirited citizens in this great work of education. They also serve to show that the Trustees of Cooper Union had, from the beginning of their duties, a definite purpose which they have steadily and successfully pursued for now more than a quarter of a century.

“ ENDOWMENTS.

To correct a prevailing impression arising from the fact that the “ Union ” is the foundation of a single individual, that assistance from other persons or quarters would be unacceptable, the Trustees call attention to the fact, that they are by the Charter, “ authorized and empowered to receive all and every endowments made to it, and to appropriate the same to the uses, intents, and purposes contemplated ” in the charter and the deed of trust. If, therefore, the enlightened and the benevolent should find in the operations and aims of this corporation any department which address themselves to their sympathies, the trustees will be glad to receive and to administer to the best of their ability, any donations which may be made either for specific objects or the general purposes of the Union. The trustees would suggest, especially, the endowment of professorships in the Polytechnic School, to which the name of the donor may be affixed or not, according to his desire. In connection with this subject, Mr. Cooper desires the Trustees to state, once for all, that his own name was given to the corporation, not by his desire, but by the Legislature, against his express wish.

CONCLUSION.

It is the hope of the Trustees that this report will make the public fully acquainted with the nature of the institution under their charge, and that all classes will avail themselves of the privileges which it offers.

In organizing its various departments, they have aimed at solid utility rather than empty display and temporary attraction. Of course, defects in the plan and its execution will from time to time appear, for which the remedy will be promptly applied. With the countenance and sympathy of the community in their behalf, the Trustees expect to accomplish results of lasting value; but without it, they are fully aware that their efforts must fail. They therefore earnestly request that all persons who take an interest in popular education, will visit the institution; and from such, all suggestions for its improvement will receive a respectful consideration. The sphere of its influence may be humble, addressing, as the Union does,

mainly the working classes, but let it be remembered that there is no soil more grateful for the seeds of knowledge, or more responsive to intellectual culture, than the industry and the mechanical skill of our common country. *Esto perpetua.*"

The list of the names of the first Board of Trustees and of the first Instructors is given as a matter of historical interest.

OFFICERS AND TRUSTEES OF THE COOPER UNION FOR THE ADVANCEMENT OF
SCIENCE AND ART. (1859-60)

President.—PETER COOPER.

Treasurer.—WILSON G. HUNT.

Secretary.—ABRAM S. HEWITT.

Curator and Assistant Secretary.—JAMES T. HODGE.

Trustees.—Peter Cooper, Daniel F. Tiemann, John E. Parsons, Wilson G. Hunt, Edward Cooper, Abram S. Hewitt.

Advisory Council of the School of Design for Women.—Miss Mary M. Hamilton, Mrs. Jonathan Sturges, Mrs. Geo. Curtis, Mrs. Henry M. Field, Mrs. Richard Hildreth, Mrs. S. L. M. Barlow, Mrs. Wm. Henry Jones, Mrs. V. Botta, Mrs. John Sherwood, Mrs. Abram S. Hewitt, Mrs. A. M. Cozzens, Mrs. Wm. H. Osborn.

"INSTRUCTORS.

School of Design for Women.—T. Addison Richards, Robert O'Brien, Constantine Herzberg.

Mathematics.—B. S. Hedrick, H. C. Thompson, James D. Wilson, Chs. McLean Knox, John P. Appleton.

Chemistry.—John C. Draper, M. D., P. H. Vanderweyde, M. D.

Mechanical Philosophy.—Levi Reuben, P. H. Vanderweyde, M. D.

Architectural Drawing.—John F. Miller, Henry Palmer, Clarence Cook.

Mechanical Drawing.—Richard S. Smith, Thomas D. Stetson, George H. Babcock.

Free Hand Drawing.—Richard S. Smith, Constantine Herzberg.

Vocal Music and Vocal Physiology.—Charles Guilmette, M. D."

From the Fifth Annual Report the following statements by the Trustees of what had been done are quoted :

"ANNUAL REPORT OF THE TRUSTEES OF THE COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART, PRESENTED BY THE SECRETARY AT THE COMMENCEMENT, HELD IN THE GREAT HALL, ON FRIDAY, MAY 27, 1864.

Ten years have elapsed since the corner stone of this Institution was laid, and to-night is completed the fifth academic year of its existence. Founded by the liberality of a single individual, for the express purpose of improving the working classes from whose ranks he had forced his way to wealth and influence ; conveyed to six Trustees, selected from among his relatives and personal friends in order to insure harmony of action ; managed by them without appeals for popular aid or applause, but under the most solemn sense of the responsibility of the great trust which had been confided to them—the Cooper Union for the Advancement of Science and Art has at length reached a position in which its aims are perfectly defined, and its results begin to be of a magnitude to interest all classes in the community. The working classes of this city cannot be elevated and improved without a direct benefit to all other classes ; and it is one of the most gratifying features of the public receptions and exhibitions of this Institution, that here all classes meet and mingle together on terms of perfect equality, and with mutual confidence and respect. The Trustees have endeavored to cultivate this relation in all parts of their organization, and they advert to it upon this occasion, because in the name of the "Union," selected by the founder of the Institution as its corporate title, it was designed to

inculcate the great social lesson of the mutual dependence and inseparable interests which bind together all classes in organized communities, and which should produce united good will and steady efforts for the general progress and welfare." * * *

The provisions of the Trust Deed as to the objects and purposes of the trust are then given, after which the statement proceeds :

"Accordingly, the Trustees, having reserved the great hall, in which we are assembled, and the two floors next above, for rental, in order to procure a revenue for the purposes indicated, have established practically a free night college for the working classes, on as broad and liberal a scale as was consistent with their wants and the time they can devote to self-culture. The course of instruction commences with algebra and geometry, and includes a complete mathematical course to the calculus, and its application to mechanical Science. A complete course of instruction is given in chemistry and natural philosophy, while in the graphic Arts the most ample provision has been made for instruction in free hand, architectural and mechanical drawing, in perspective, and in studies from life. The course is so arranged that pupils may pursue either one special department of knowledge, or, by remaining five years in the institution, complete as full a course of scientific instruction as is given in any of the colleges of the country. The number of pupils who enter the night classes is surprising. The number admitted to the present course is as follows :

	1863-'4.
Mathematics.....	430
Chemistry.....	173
Natural Philosophy.....	103
Architectural Drawing.....	100
Mechanical Drawing.....	225
Free Hand Drawing.....	250
Total.....	1,281

The number remaining at the close of the term is 482, of whom 349 have received certificates. This shows apparently a great falling off ; but when it is considered how many of those who apply are totally unfitted by previous culture and habits of mind for the severe intellectual effort required by a mathematical course, and that frequent changes of residence necessarily occur in mechanical employment, it is remarkable that so many persevere to the end. To all such as may have been diligent and attentive, certificates are awarded, of three grades :

1st. For superior ability and diligent attendance.

2d. For ability and diligent attendance.

3d. For good conduct and diligent attendance.

A list of those who have received certificates is appended to this report.

The names of the teachers employed in the night classes are prefixed to this report, and the Trustees desire to make a public acknowledgment of the ability and fidelity with which their duties have been discharged.

The cost of maintaining the night classes in 1863 was \$3,450.52.

Of those who entered five years ago, about 1,500 in number, five pupils have passed through the full course of instruction with honor to themselves and credit to the Institution. They are therefore entitled to the diploma of the "Cooper Union," and the high honor of being its first "graduates." The names and occupations of these young men are as follows:—

Robert Scott, Clerk.

Geo. Haitzen, Engraver.

Wm. L. Taylor, Clerk.

Wm. Forbes, Machinist.

Eugene Corbett, Coachman.

When they look back upon the five years of diligent labor through which they have passed, earning their daily bread by honorable daily labor, and giving up their nights to honorable self-culture, they have as much right to be proud of their present position as the Institution is proud of them. Such young men will never disgrace its diploma, and the Trustees introduce them to you as graduates who are sure to fill positions of honor and usefulness in the world, if they but persevere in the good course which they have commenced. The Trustees have decided to prepare and present to each graduate a "Cooper Union Medal," which they trust will be as prized and as honorable as the Franklin Medal, which in Boston is a sure guarantee of success to the boy who wins it. Let it not, however, be supposed that among the companions of these young men there were not many who, under more favorable circumstances, would have been standing by their side to-night, and sharing in the honors which are here conferred. Some worthy pupils have died in the midst of their toils; others have been forced to remove by the pressure of circumstances; many have entered the navy as mechanical engineers, thus supplying a pressing need of the country at a time when mechanics of the requisite education were not elsewhere to be found; while of the large numbers who have gone forth to fight the battles of their country, many have given up their lives upon the sacred altar of duty and patriotism. They at least have no need of diplomas or medals, for their deeds and their glory are registered in letters of living light, so that at the last all mankind shall know and honor them as they deserve. * * *

THE PICTURE GALLERY

Contains 383 pictures, of which 241 belong to the Bryan Gallery, recently presented to the New York Historical Society, by its owner, Mr. Thomas J. Bryan. During the year, 164,343 visitors have entered the Gallery, and it is perhaps to be regretted that the public will soon be compelled to go elsewhere in order to get admission to a free gallery of art, as it is very doubtful whether in any other Institution it will be possible to reach the same class of visitors so effectually; and to the working classes a free gallery of art is of more consequence than to the rich, who have abundant opportunity to cultivate a taste for art, while to the working classes this gallery alone has been accessible. The Trustees have no more interest in this question than any of their fellow citizens, but it is not wrong for them to suggest that whoever will contribute to provide a permanent free gallery of art in this Institution will be doing a great service to the public, and entitle himself to be called the friend of the working classes, who, too poor to buy pictures, are created rich enough to take in all their beauty and worth." * * *

At the conclusion of their report upon the several departments under their charge, a warm tribute is paid Mr. Cooper, and the announcement is made that the five members of the first graduating class desire to be presented to him. This unexpected incident proved of great interest as each of the boys took his hand and said a few grateful words. Mr. Cooper, in response to the greeting given by each of the boys, recited the circumstances that led him, many years before, to conceive the plan of the Institute. The fuller statement in regard to this, made on a somewhat similar occasion some years later, has already been quoted in the previous pages.

In the Tenth Annual Report, July 1st 1869, the Trustees briefly review the history and circumstances of the origin of the Institute. They recite the early and persistent efforts made by Mr. Cooper, to secure to the City "the system of free common school education

which is now its chief glory. But the common school system could not be expected to supply that special knowledge which the mechanic is called upon to apply in the wonderful development of human industry which characterizes our age, and without which he cannot either rise in life or in the scale of society." For this reason, they go on to say, Mr. Cooper, desired to furnish opportunities for obtaining a knowledge of mathematics, natural philosophy, chemistry and drawing, which are so essential to the workmen who desire technical education.

They state that the pupils who come from night schools are not sufficiently well taught in arithmetic to go on with the classes in the Union, and propose to petition the City Board of Education to provide a school in which adults can be trained in these elementary studies.

They announce the lease of a part of the upper portion of the Building to the National Bank Note Company for a term of twenty years, at an annual rental of \$10,000; with which increase of income they promise additional facilities. They announce the appointment of Professor Wm. G. Plympton, of "The Brooklyn Polytechnic Institute," to the "Professorship of Natural Philosophy and Mechanical Engineering."

The Fourteenth Annual Report (1873) is signed by J. C. Zachos, Curator, instead of by the Trustees and the subsequent reports of the general condition of the Institute have borne his signature. The Trustees, however, appear again with a general statement in the 24th Annual Report—the Curator still reporting in detail the departments, with the usual reports of the several teachers.

In the eighteenth Annual Report, the announcement is made that "on the 6th of October, 1872 the Cooper Union Library was opened for the first time on Sunday from 12 A. M. to 9 P. M. The experiment inaugurated by the Trustees deliberately and cautiously, has resulted in the most gratifying success."

As a succinct showing of the work of the Institute for twenty years, the following extracts, from the 19th Annual Report, under date of May 29th 1878, will be found of interest; they contain, in the general report made by the Curator, Dr. J. C. Zachos, a statement of the work accomplished; with an account of the special work in the art classes during the session of 1877-'78, given by Mr. Fitz Gerald Tisdall, Jr., Director of The Schools of Science and Art.

Dr. Zachos says:

"The nineteenth academical year of the Cooper Union finds every department of its usefulness undiminished; its free classes in Art and Science overflowing in numbers, its teachers and officers unflagging in their zeal, and fruitful in their success, to promote the interests of the Institution. The faithful work of twenty years in diffusing practical knowledge in Art and Science, in instructing yearly over two thousand young men and women how to earn an independent living by

the skill and knowledge acquired within its walls; the open hospitality of its free Reading Room, and free Lectures, where thousands daily assemble, and the living presence of its old pupils, as teachers of Science and Art, or in responsible positions as master workmen and directors of workshops, all over this land, have made, at last, the name of the Cooper Union familiar to every intelligent man and woman in this country.

"The commercial revulsions and depressions in all departments of industry which have afflicted the country for some time past, and have brought pecuniary distress upon many private families and individuals, have served to vindicate the value, as they have in no wise diminished the demand upon the resources of the Cooper Union."

THE AIM OF COOPER UNION.

The Cooper Union grapples with all social and industrial problems in a very radical way, by promoting the power and the means of their solution, rather than dogmatizing upon theoretical methods. It aims to educate the industrial classes into intelligent skill, as a necessary antecedent to their prosperity and happiness. The theory of the Cooper Union may be said to go further than this. It regards some form of productive and skilful labor as adapted to all capacities, ranks and conditions of men and women; not only as a resource against sudden destitution, or the accidents of fortune, but as promoting individual independence, happiness and true endeavor, worthy of the most gifted intellect and natural endowments. Accordingly, this institution offers its advantages to the rich as well as the poor, to those independent of paid employment, as to those who are so dependent. The Cooper Union cannot be regarded merely as an eleemosynary institution, but as illustrating a great idea—the union of Art and Science with each other, and with practical life—the union of productive labor, with the refinements, the training and the education that make human life worthy and happy.

Narrow as is the actual sphere, and limited the means of such an institution, the principle and example it sets forth is co-extensive with the wants and interests of the whole country. Its principle underlies Republican institutions and true progress in civilization—the education of the industrial masses.

THE WORK ACCOMPLISHED.

Yet the actual work of the Cooper Union is not insignificant, and compares well with any educational institution in this country or in Europe. Since the property was transferred to them by Mr. Cooper, in 1857, at the cost of \$630,000 the Trustees have expended over \$733,000 in giving free instruction to the public. The past year's expenses have been \$48,324.02. This sum has been derived from the rents of the building, and from the income of a special endowment of \$150,000 made by Mr. Cooper, for the support and increase of the Free Reading Room and Library. With this expenditure the Trustees have maintained, during eight months of the year, a system of day and evening schools in which 3,395 pupils have been taught the rudiments of science and of art. The Free Reading Room has been kept open every day from 8 A. M. until 10 P. M., with a daily attendance, averaging at times 2,500 in the winter. Besides this, free lectures have been given in Natural Philosophy, Chemistry, English Literature, Rhetoric and Elocution, by the respective Professors of these subjects, each Professor lecturing two or three times a week in the smaller Lecture Rooms of the Institution. In the large Hall of the Cooper Union, every Saturday evening, during the entire winter, great audiences have been drawn to hear popular lectures on scientific subjects. Men of reputation, and accomplished in their respective subjects, have been the lecturers chosen to instruct and interest the public. All this has been given without the least charge to those who partake of the instruction, or any of the privileges of the Institution. It is questionable

whether an equal sum of money could have been expended more economically or usefully in the interests of education and the diffusion of general knowledge.

This fact will be better appreciated by a more particular account of each department of the Cooper Union.

THE EVENING SCHOOLS OF SCIENCE AND ART.

The number of pupils admitted to the different classes of these schools has amounted to 2,862. They are mostly from the various trades and occupations of the city. They are earnest young men who prefer to spend their evenings in study than in idleness or dissipation. None are admitted under the age of fifteen, or who are not acquainted with the rudiments of Reading, Writing and Arithmetic, which are now taught in free evening schools under city authority. Females are admitted to the Lectures and the Scientific Classes, but not to the Art Classes; but a special Art School is provided for women in the day.

The course of study in the scientific department embraces a full course of mathematics, as preliminary to any very thorough scientific study. Very few have come to these schools prepared with elementary mathematics for the study of practical Engineering and Mechanics. It is to be regretted also that very few students out of the whole number, can remain to pursue the whole course of scientific studies offered by the Institution, and which entitles them to its Medal and Diploma. But nothing less than such a course of study can enable a man to achieve the highest sphere of usefulness in the ranks of modern industry. Certificates of proficiency are, however, given to those who have attended the class on any particular subject, and pass a satisfactory examination. Six hundred and twenty-three certificates were given this year.

It is proper to mention that the lectures on Natural Philosophy and Chemistry, as also those on English Literature, Elocution and Rhetoric, are attended by many who do not belong to the class. This kind of attendance would doubtless be larger if the Lecture Rooms were more accessible to the public.

The Art department of the evening schools embraces instruction in all branches of drawing, Free-hand Drawing, Architectural, Mechanical, and drawing from Cast; also Industrial Drawing and Design, and Modeling in Clay. Lectures and lessons are given in Perspective. The design of all this instruction, as in the school of Art for Women, is practical, and as bearing on some useful employment, in which the arts of design, and drawing are the principal or accessory occupations. But if the pupil shows a talent for high art, and has the leisure and means to pursue it, he or she is recommended to other schools in New York City, established for the special instruction of professional artists."

* * * * *

"For this present academic year, the Director of the Free Night Schools in Science and Art reports the number entering the scientific classes, as 1,333; of these 655 remained to the close, and 332 obtained certificates of proficiency.

In the Free School of Art, 1,529 pupils entered the classes; 790 remained to the close; and 291 obtained certificates.

Owing to the financial and industrial depression, there has been some perceptible decrease in the number of applicants to the schools; but still, the number has been greater than the room accommodation, in the Art schools.

* * * * *

614,000 persons, of whom 10,103 were women, are reported as having made use of the privileges of the Free reading room during the year!

Fourteen free Saturday night lectures by different distinguished specialists were given during the winter in the large hall, which ac-

commodates an audience of three thousand, and at many of the lectures it was full. Only two of these lectures related to the Fine or Industrial Arts. One by James Douglas, jr., on "Egyptian Architecture and Obelisks" and one by Prof. B. W. Putnam, on "The Potter's Wheel."

"THE ANNUAL EXHIBITIONS AND THE COMMENCEMENT.

In conclusion, the annual Exhibitions of the Art Schools and of the Commencement exercises, take place, respectively, on the last three evenings of the month of May.

The Exhibitions bring forward to the public inspection, the best results of the studies of the pupils in drawing, painting and engraving, modelling in clay, and original designing in different departments of arts. Although "high art" is not aimed at, either in the instruction or execution, yet the excellence of the execution in many instances, shows the carefulness and thoroughness of the instruction given, and a high degree of talent in the pupil.

The commencement exercises regard those of the pupils who have finished their course of five years' attendance on the schools of science and receive diplomas, and the conferring of medals and special recognition, on those pupils who have distinguished themselves in the schools of Art. A very small proportion of the students in the scientific classes reach the proficiency necessary for the diploma and medal of the Cooper Union. The reason of this is, that not only is the standard high, but few of the pupils can remain long enough in the vicinity of the Institution to pursue the whole course—the exigencies of their industrial life often obliging them to go elsewhere to pursue their calling. But the knowledge gained here is a lasting possession; conducting to a useful and honorable career; justifying the wise foresight which has provided sound scientific and artistic instruction for the rising generation of mechanics and artisans.

In summing up this cursory view of the Cooper Union, the thoughtful mind will reflect on the fact, that with a sum of money less than the annual expenditure of many a wealthy family in this city, the Cooper Union counts its yearly beneficiaries by the hundred thousand." * * *

J. C. ZACHOS, M. D.,

Curator.

In the course of his report Mr. Tisdall, Director of the Free night schools in Science and Art says:

The annual number of applicants for admission is directly affected by the demand for those kinds of labor which require a knowledge of any of the numerous subjects included in the scientific course; or expertness in any of the various kinds of drawing taught in the art classes. When times are good, there is every inducement for young men and women to attend the schools and obtain the knowledge and skill, which in all probability will command a ready and satisfactory compensation. But when times are bad, there is little inducement to devote time and labor to the acquisition of knowledge or skill for which there is no present, and apparently no prospective, demand.

Owing to the great financial depression, there has been, therefore, a very perceptible decrease in the number of applications for the art classes; while unaccountably there has been none in the case of the scientific classes. The number of applicants has still, however, been larger than the capacity of the school accommodations. The number of pupils admitted is—as my summary report will show, slightly greater than that of last year. There again appears the usual large proportion of

those who did not remain until the close of the term. On the whole, the great depression in every branch of business cannot be said to have injured the schools.

The amount of work done by the art classes compares favorably in quantity and quality with that accomplished in previous year. The new classes organized in Designing and Industrial Drawing have been very successful for their first year's trial. If corresponding progress be made in the future, the usefulness of the Institute will be greatly increased. * * *

The following is the summary of attendance for 1877-'78 :

THE FREE SCHOOL OF ART.

Classes.	Admitted during the term.	Remaining at close of term.	Number that received certificates.
Perspective Drawing.....	79	37	25
Mechanical Drawing.....	193	110	59
Architectural Drawing.....	230	114	34
Drawing from Cast.....	87	43	22
Form Drawing.....	60	48	14
Industrial Drawing.....	216	114	34
Free Hand Drawing.....	548	277	88
Modeling in Clay.....	116	67	15
Total in School of Art.....	1,529	810	291
Total in School of Science.....	1,333	655	332
Grand total.....	2,862	1,465	623

FITZ GERALD TISDALL, JR., PH. D.,

Director.

THE COOPER UNION.

OFFICERS AND TRUSTEES—1877-8.

President.—PETER COOPER.

Treasurer.—WILSON G. HUNT,

Secretary.—ABRAM S. HEWITT.

Trustees.—PETER COOPER, DANIEL F. TIEMANN, JOHN E. PARSONS, WILSON G. HUNT, EDWARD COOPER, ABRAM S. HEWITT

Curator.—J. C. ZACHOS.

Clerk.—L. C. L. JORDAN.

Instructors in the Free Night Schools of Science and Art.—Fitz Gerald Tisdall, Jr., PH. D., Director of the Night Schools. Chas. S. Stone, A. M., Professor of Chemistry. Geo. W. Plympton, A. M., C. E., Professor of Philosophy, Mechanism and Astronomy. J. C. Zachos, Professor of Oratory, English Language and Literature. George W. Coakley, LL. D., Instructor in Diff. and Integral Calculus, and Analytical Geometry. Thos. J. Parker, Director of Laboratory. Wm. G. McGuckin, A. B., Instructor in Trigonometry, Geometry and Algebra. Waller Holladay, John B. Skinner, G. C. Segur, Instructors in Geometry and Algebra. J. F. Maurer, Instructor in Descriptive Geometry and Mechanical Drawing. J. A. Saxton, Edwin B. Jennings, A. B., Instructors in Geometrical and Mechanical Drawing. John Buckingham, John F. Schloer, Instructors in Architectural Drawing. Benjamin Braman, Instructor in Perspective Drawing. Franz Venino, Instructor in Cast Drawing. W. W. Scott, Instructor in Form Drawing. Max Eglau, J. A. McDougall, Jr., Instructors in Drawing from Copy. R. Wasserscheid, Instructor in Industrial Drawing. Nicholas Rossignoli, Instructor in Modeling in Clay.

The 22nd Annual Report of the Trustees (1881), contains the announcement by the Curator of the completion of the addition to the building; and also a letter from Mr. Cooper, as follows:

"Mr. Peter Cooper, the founder of the Institution, has added another story, during the past year, to the Cooper Union, at an expense of \$75,000. The design of this

addition is to give larger room to the art classes, already organized and in excess of numbers, beyond the present accommodation.

There will also be an Art Gallery of the work of the pupils of the Institution, where their best drawings and paintings will be placed.

Mr. Cooper hopes to make this a very useful addition to the general design of the Institution, for the instruction and furtherance of the pupils. For this purpose Mr. Cooper has added \$30,000 to the endowment funds to enable the Trustees to carry out his designs.

The following letter was sent to the Trustees, conveying this gift, on occasion of the celebration of his ninetieth birthday:—

“Messrs. Wilson G. Hunt, Daniel F. Tieman, John E. Parsons, Edward Cooper and Abram S. Hewitt, trustees of the Cooper Union for the Advancement of Science and Art.

Gentlemen: Please accept my check for \$10,000 to be added to \$10,000 of the Golden Wedding Fund, established by me seventeen years ago, the interest of which you have annually donated to institutions for aiding poor children. I also present my check for \$30,000, together with the receipts in full for \$70,000 I have expended during the last year on this building, hoping thereby, with your help, to enlarge the capacity of the institution for the purpose of giving free instruction to a large number of pupils in the application of Science to all the useful and necessary purposes of life; to aid the trustees in arranging the new part of the building, in accordance with their best judgment and efforts, for the accomplishment of the greatest possible good to the number of the youth of this, my beloved native city; and to meet the expense of enlarging the course of instruction in this institution.

Very respectfully, your obedient servant,

PETER COOPER.”

Notwithstanding this addition of two entire stories, the pressure for admission to the schools is so great that already as the latest statement of the Trustees shows, there is demand for double the facilities and amount of room, possessed by the institution. The family of Mr. Cooper, as will appear, manifest a like interest and give with like liberality to the institution, but, notwithstanding their generous support, it is lamentably inadequate to meet the legitimate demands made upon it by the very classes for whose use it was established. In this dilemma, the Trustees wisely appeal to the benevolent public, to aid in the development of this noble foundation.

When will the community comprehend that if it would be served, or helped, it must serve and help itself? Cooper, Girard, Peabody, and their glorious Compeers, can but point out to the public the paths to follow, for Public Education, is in no sense a “charity;” it is the plain duty of the public, and public Schools, public Libraries and public Art Galleries, supported by the public and freely open to the public, are the only instrumentalities of their class, that can adequately meet the needs of the public.

Since Cooper Union admittedly aims only to supplement and complement the public educational institutions of the city, and already finds the work far greater than it is able to cope with, it is surely time to call the attention of the public to the situation.

Increasing demands for every means of public education will never cease, but with the cessation of the city's growth,—as the previous efforts of mechanics societies, already recorded, have been, so, in like manner, must this effort of a single citizen be supplemented by the public efforts, or, it will prove wholly inadequate; but, if the needs it has so far endeavored to meet, be now met by public instrumentalities, as they should be and as is done elsewhere,—then, it can advance to fresh fields of usefulness; and attempt, for the public, the solution of new problems.—

The government and direction of the Institution is conferred by the charter, absolutely upon the Trustees.

The following is the "seal" adopted by the Corporation.

"1. The device of the seal of this corporation shall be a circular disc, upon the outer edge of which shall be the words, "The Cooper Union for the Advancement of Science and Art, founded A. D. 1859, by Peter Cooper, a Mechanic of New York." These words shall surround a medallion head of Peter Cooper, on the rim of which shall be the words, "Whatsoever things are true."

Chapter IX of the By-Laws, is here given as it treats of the Department of Instruction.

"CHAPTER IX. OF THE DEPARTMENT OF INSTRUCTION.

1. The Trustees shall establish and maintain a school for the instruction of respectable females in the arts of design, and in such other branches of knowledge as in their judgment will tend to the elevation and employment of female labor. The instruction afforded in this school shall be given without charge, but the regulations may provide for the admission of amateur pupils for pay, so long as industrial pupils are not thereby excluded. All money received from such amateur pupils, shall be applied to the support of the school. The industrial pupils will be required to aid in the instruction of the school, so far as the Director thereof may require.

2. The Trustees shall open and maintain a Free Reading room, in the large hall in the third story, for the use of the working classes of both sexes, and their families.

3. The Trustees shall provide free courses of instruction, at night, in the elementary principles of science, and their application to the practical business of life. These courses may be enlarged from time to time, but shall always include instruction upon chemistry, physics, mechanics, mathematics, and mechanical drawing. This instruction shall be adapted to the comprehension and improvement of the mechanics and mechanics' apprentices of New York and its vicinity, being intended to bridge over the gap which now exists between science and the practical occupations of life.

4. The Trustees shall arrange for an annual course of public lectures, upon the principles of government and upon social and political economy, according to the provision contained in the Trust Deed; and this course of lectures shall be so managed and arranged as to be a leading feature of the Institution.

5. The Trustees shall, as soon as the income of the Corporation will warrant, establish and maintain a thorough polytechnic school, upon such terms and conditions as shall be prescribed by the Trustees, at the time of its organization.

6. The Trustees shall, as soon as the preceding departments have been organized, or earlier, if they shall deem it expedient, organize the Society of the Associates of

the Cooper Union for the advancement of Science and Art, as prescribed by the Charter and Deed of Trust.

7. The Trustees shall annually provide for the lectures and debates of the students, according to the request contained in the letter of Peter Cooper, accompanying the Trust Deed; and also for the adoption of such rules and regulations by the students as shall meet with the approval of the Trustees."

The next chapter directs in detail the action of the "committee on instruction and lectures." These are all that relate specifically to the schools.

The first statement of the Trustees, subsequent to the decease of Mr. Cooper, is included in the 24th Annual Report (May 26, 1883). This has been already referred to, and is given in full as it contains the provisions of the Deed of Trust, and a succinct history of the Institution.—

"STATEMENT OF THE TRUSTEES.

On the 29th of April, 1859, Peter Cooper executed a deed in fee simple of the property known as the Cooper Institute, without reservation of any kind to six Trustees, upon the conditions specified in the act of the legislature, authorizing the gift to be made, "that the above mentioned and described premises, together with the appurtenances, and the rents, issues, income, and profits thereof, shall be forever devoted to the instruction and improvement of the inhabitants of the United States in practical science and art." Of the Trustees named all have survived until the present year. But on the 4th of April last, death entered the charmed circle and took from among us, the one who had been our main stay in carrying on the Institution, as he was its founder and benefactor. It seems now, as if Mr. Cooper had anticipated the order of nature, for, in the trust deed he provided that the first vacancy in the Board should not be filled, and the surviving Trustees feel that it can never be filled.

When the Trustees proceeded to the execution of their duties, they laid down as the fundamental basis of their operations, the following principles:—First, that the details of the Institution in all the departments, should be arranged with especial reference to the intellectual wants and improvements of the working classes. And, second, that as far as might be consistent with the first principle, all interference with the plans or objects of other existing institutions in this city should be avoided. Guided by these principles the Trustees arrived at the following broad scheme, as best calculated to instruct, elevate and improve the working classes of this city:

First:—Instruction in the branches of knowledge which are practically applied in their daily occupations, by which they support themselves and their families.

Second:—Instruction in the laws by which health is preserved and the sanitary condition of families improved; in other words, in personal hygiene.

Third:—Instruction in social and political science, by virtue of which communities maintain themselves, and nations progress in virtue, wealth, and power.

Fourth:—Instruction addressed to the eye, the ear, and the imagination, with a view to furnish a reasonable and healthy recreation to the working classes after the labors of the day.

THE DEVELOPMENT OF THE INSTITUTION.

This general scheme, necessarily included both sexes within its scope, and hence it was decided to extend all the privileges of the Institution to men and women alike. In adopting this general principle, the Trustees were fully aware that it could not all be carried into effect at once; and, that the respective divisions, although philosophic in their nature, must necessarily be blended to some extent in

their execution. Nor was it felt to be any ground of objection, that the useful and practical should be mingled with the agreeable and recreative.

The development of the Institution has followed in the line thus marked out, keeping in view the execution of the specific conditions of the Trustees, which were as follows :

“The premises above-mentioned and described, and the appurtenances, including all future endowments made to the party hereto of the second part, the appropriation of which shall not be specially provided by the parties making the same, and all money and property which shall at any time belong to the party hereto of the second part, and all the rents, income, issues, and profits thereof, shall be devoted to and among the following objects and purposes: The division and appropriation of such rents, income, issues and profits to and among such objects and purposes; being left discretionary with the Board of Trustees provided for as aforesaid, and it being left discretionary with such Board, when, and to what extent they shall carry out any of such objects and purposes, save and excepting that the course of instruction on social and political science, hereinafter provided for, shall have the preference over all the other objects of expenditure specified, in case there shall not be means adequate for them all, and shall forever stand pre-eminent among them.

1. To regular courses of instruction, at night, free to all who shall attend the same, under the general regulations of the Trustees, on the application of science to the useful occupations of life, on social and political science, meaning thereby not merely the science of political economy, but the science and philosophy of a just and equitable form of government, based upon the great fundamental law that nations and men should do unto each other as they would be done by, and on such other branches of knowledge, as, in the opinion of the Board of Trustees, will tend to improve and elevate the working classes in the city of New York.

2. To support and maintenance of a free reading-room, of galleries of art, and of scientific collections, designed, in the opinion of the Board of Trustees, to improve and instruct those classes of the inhabitants of the city of New York, whose occupations are such as to be calculated, in the opinion of the said Board of Trustees, to deprive them of proper recreation and instruction.

3. To provide and maintain a school for the instruction of respectable females in the arts of design, and in the discretion of the Board of Trustees, to afford to respectable females instruction in such other art, or trades, as will tend to furnish them suitable employment.

4. As soon as in the opinion of the Board of Trustees, the funds which shall from time to time be at their disposal, will warrant such an expenditure, such funds shall be appropriated to the establishment and maintenance of a thorough polytechnic school; the requirements to admission to which shall be left to the discretion of the said Board of Trustees, and shall be specially determined by them from time to time, and which shall, as far as possible, and as soon as possible, be made equal to the best technological schools now established, or hereafter to be established. Until the funds at the disposal of the Board of Trustees shall be sufficient, in the opinion of the said Board of Trustees, for the establishment of such polytechnic school, the said Board of Trustees may furnish with rooms and accommodation for such school, and may assist in the maintenance thereof, the department of public instruction in the city of New York, the Trustees of any college or university, or any other body, individual or individuals.

5. To provide rooms, in the judgment of the Board of Trustees, suitable for the offices of a society to be organized, as provided in the act herein before specially referred to, and to be called “The Associates of the Cooper Union for the advancement of Science and Art,” and to furnish to such society for its general meetings on one evening of each week, the great hall of the building, if the council of the said society shall require it so often.

THE EAGERNESS OF THE PUBLIC TO MAKE USE OF THE OPPORTUNITIES OFFERED.

The plan thus outlined was carried into effect, and has not been materially changed in its scope, although it has been greatly enlarged in its operation. From the very outset all the facilities of education offered by the Institution were promptly taken advantage of by the classes of the community for whom they were designed. The increase in numbers, therefore, of the pupils in attendance, although large, has not been so striking as the improvement in the character of the instruction offered by the Institution. But there has been a steady increase in the number of pupils who have certificates as the evidence of good and faithful work done. At the close of the first full year in 1861 the number of pupils who received certificates were 272; at the close of the present year, 778 pupils have been awarded certificates in the night classes, 144 pupils have received certificates in the Art school, and 33 students have received certificates in telegraphy—a total of 955 certificates awarded the present year.

The character of the instruction given is also much more thorough, and the expenses have increased in a corresponding degree. In 1860 the expenditure was \$30,800.71. In 1882 the expenditures amounted to \$54,421.42. In 1860 the number of teachers employed was 16; in 1882, it was 36. The number of readers attending the reading room in 1860 was about 250,000; in 1882, it was 475,988.

The Trustees regret to say that, while there is an overwhelming demand for the privileges of the Institution, so much so, that in some departments applicants are compelled to wait for more than a year before admission can be granted, the Institution has reached the limit of its usefulness, with the space at its command and the money available for its support. Its income is mainly derived from two sources: from the rents received from portions of the building which are leased to private parties, and for the use of the great hall for public meetings. It has also an endowment amounting to \$200,000, provided, during his life time, by Peter Cooper, from which, last year, the revenue was \$11,609.16. For the first time during the last year the expenses materially exceeded the receipts by the sum of \$3,548.54. This deficiency was in reality provided for out of a special donation of \$30,000, heretofore made by Mr. Cooper for general expenses, and of which there still remains a balance sufficient to pay the debts of the corporation. By the terms of his will Mr. Cooper gave \$100,000 to the Institution, the interest on which will be sufficient, in addition to his previous endowments and the rents, to defray the ordinary expenses, upon the scale of usefulness which is provided for by its present organization, so that it may be said, that Mr. Cooper not only founded the Institution and erected the buildings, but has provided it with means sufficient for the extension which was given to it during his lifetime.

ADDITIONAL ENDOWMENTS BY THE PUBLIC NEEDED.

But if the endowment were larger, it would be possible greatly to enlarge, and probably to double the usefulness of the various departments of instruction now opened to the public. Such an enlargement would require more space, which could only be had by a reduction of rented space. This reduction would have to be replaced by additional endowments. The Trustees have no doubt whatever of the propriety and the necessity of enlarging the work of the Institution. If the portions of the building now rented, could all be appropriated to the work of instruction, it would be possible certainly to double the facilities now offered freely to the public. The annual expenditure involved in such an enlargement would undoubtedly require an endowment of one million of dollars, in addition to the present funds of the Institution. This statement is made because some suggestions have appeared in the public journals, that it would be well to signalize the great change which has taken place in the life of its founder and its benefactor, by raising a fund

which would enable his designs to be carried out to their final completion. The Trustees think it is a proper time for them to say that Mr. Cooper never expected to be able, of his own means, to accomplish the full realization of his plans, and would gladly have welcomed any addition to the funds of the Institution from any source whatever. If, therefore, it should occur to any one, in the disposition of his means, to make a gift to the Cooper Union the Trustees desire it to be understood that such gifts will be gladly received; and that in the enlargement of the School of Design for Women, in the establishment of a Reference Library on a larger scale, and particularly in the creation of an Art Library, designed especially for the use of the pupils of the School of Design, and of a Museum of Art, and of mechanical models, containing specimens useful to the formation of taste and embodying examples of special excellence, there is abundant opportunity for endowments to the extent of a million of dollars; and this sum, sooner or later, the Trustees hope to secure for the Institution. The children of Mr. Cooper have already notified the Trustees that, in accordance with what they understood to be Mr. Cooper's final wishes, they will contribute during the coming year, the sum of \$100,000, in addition to the bequest of \$100,000 contained in his will.

It has been the remarkable experience of the Board of Trustees, for twenty-four years to carry on this Institution without a break in their number, and now that its chief benefactor is removed, they feel it to be but just to him to record the fact that the Institution has fulfilled in the highest degree the expectations which led to its foundation: that the results in educating the community in practical science and art; in opening new spheres of usefulness for women; in elevating the tastes and enlarging the opportunities for self-help among all classes who have to support themselves, have been most satisfactory and encouraging. They doubt whether at any time, or anywhere in the world, results of equal value to the community have ever been achieved with so small an expenditure of money. They feel that the example set by Mr. Cooper, who gave his own personal attention, as well as his money to the Institution, is one which must commend itself to the judgment and the imitation of all good citizens, who desire to benefit the people in a way which carries with it no sense of humiliation, on the part of those who enjoy the advantages of endowments intended for the general welfare.

WILSON G. HUNT,
DANIEL F. TIEMANN,
JOHN E. PARSONS,
EDWARD COOPER,
ABRAM S. HEWITT,

Trustees."

COOPER UNION BUILDING,

May 26, 1883.

The preliminary portion of the Curator's statement for 1883,—given in the 24th Annual Report, is here appended as showing the year's work of the Union;—for, while in this Report it is with the evening drawing schools and the Day Art classes, that we are mainly concerned,—these are but parts of the great whole which is known as "Cooper Union," and it is proper to show the relation they sustain to that whole.

Although the resolutions passed by them are omitted here, the teachers, scholars, and alumni of Cooper Union, were neither negligent or tardy, in uniting with their fellow citizens in paying all formal tributes to the memory of the revered founder of the "Union;" nor were there anywhere more sincere mourners than among the grateful recipients of his wise bounties.

"CURATOR'S REPORT.

[A. General Statement.]

The twenty-fourth annual Commencement marks a progress of this Institution, in efficiency and public favor that may well give satisfaction to its late benevolent Founder, and to the Trustees who have aided him, both in the inception and in every detail of its elaborate work.

Its faithful administration and careful instruction, in every department, have procured its great usefulness, and put an increasing value to its educational course, for the rising wants of the American people.

Within a few years, and largely due to the influence of the Cooper Union, technical schools and systematic instruction in skilled forms of labor, have been established in several of our large cities.

It will be seen that the actual work of the Cooper Union, is one of the largest of that of any educational institution; in this, or any other country.

The number of pupils who have entered the various classes, during the past year, has been 3,917. Of these, 1169 entered the evening scientific classes; 1,797, the evening art classes; 496 pupils have been admitted to the Woman's Art School, and about the same number declined, for want of room. Two hundred have been admitted to the Young Men's Literary Class, two hundred to the class in Elocution, and fifty-five, to the class in Telegraphy.

Of this whole number of pupils, 2,074 remained throughout the year in regular attendance upon their classes, and a large majority of these obtained "certificates of proficiency," and other testimonials of excellent attainment in their several studies.

These pupils are drawn from every part of the country, from Maine to California and Georgia; but most of them come from New York City, and vicinity, within which limits are over two millions of inhabitants, and within an hour's reach of the Cooper Union.

ADMISSIONS.

These pupils are admitted on the simple rule of "first come first served," with such qualifications as are required by a good character, a suitable age, and an expressed purpose to turn the advantages of the Institution to industrial purposes and self-support; otherwise the classes would soon be filled with "amateurs" in art, and in the studies of science.

The pupils who leave the schools, with some proof of proficiency, demonstrate the help which such instruction is to them, by the readiness with which they get employment. There is often a call, in advance, upon the principals of the scientific and art departments for men or women thought competent to teach, or to conduct the different employments which they are taught here.

Besides this specific instruction in practical science and art, the Cooper Union diffuses a great deal of general knowledge and intelligence through its courses of lectures and its Free Library and Reading Room.

An average of 1,442 readers resort daily to the Free Reading Room. The visitors read over three hundred papers and periodicals, foreign and domestic, and draw from the library, an average of five hundred books daily.

The policy of the Reading Room is not to keep an expensive or very large collection of books, but to give the popular information of the best current paper and periodicals, and books of the established literature of our language; and keep up with such books in popular science and knowledge, as have a place outside of professional and technical learning.

The large Lecture Hall of the Cooper Union, will accommodate from 1,800 to 2,000 people; this is generally well filled by audiences that listen to the popular courses of lectures given during the fall and winter.

Men accomplished in their departments are selected, who aim to give their talents in an entertaining as well as instructive manner, with illustrations and views of the stereopticon.

All the classes and privileges of the Institution are entirely free, with the exception of the amateur class in the Woman's Art Department.

The expenses of keeping up all the departments during the past year were \$54,421.42. The income is chiefly derived from the rents of such parts of the building as are not devoted to the uses of the Free Reading Room and free classes, and from an endowment by Mr. Peter Cooper of about \$200,000. The building cost \$630,000; and total expenditures of the Trustees on the building and education from 1859 to 1882, inclusive, have been \$1,603,614.17.

When we reckon the thousands of pupils that have passed through its classes, and the hundreds of thousands that have been benefited by the other advantages of instruction in the Cooper Union, this large sum, spent in twenty-four years, will appear a very economical means to very large and useful ends."

OFFICERS AND TRUSTEES 1883.

President.— — — — —

Treasurer.—WILSON G. HUNT.

Secretary.—ABRAM S. HEWITT.

Trustees.—Daniel F. Tiemann, John E. Parsons, Wilson G. Hunt, Edward Cooper, Abram S. Hewitt.

There is, necessarily, much similarity in the successive Annual Reports; since the pressure of applicants on all departments of the Institute, is far greater than the accommodations; and, in some of them, especially in the Day Art School, applicants are registered one or two years in advance.

The Twenty-Fifth Annual Report for the year 1883-'84, and dated May 28th 1884, shows a revenue of \$49,838.13, and an expenditure of \$53,984.57. Of these expenses the Free Night Classes in Science and Art are charged with \$10,730.53. The Day Art School for Women cost a little less—\$10,649.55. The statement of the Trustees is substantially the same as was given the year previous. From the Curator's Report the following statistics of attendance are taken:

"The number of pupils who have entered the various classes, during the past year, has been 4,327. Of these, 373 entered the evening scientific classes; but this number, by entering two or more classes in science, made the number of pupils, in the several classes, 1,417; 1,956, the evening art classes; 496 pupils have been admitted to the Woman's Art Schools, and about the same number declined, for want of room. Two hundred have been admitted to the Young Men's Literary Class, two hundred to the class in Elocution, 76 to the class in Telegraphy, and 54 to the class in Phonography and Type-Writing.

Of this whole number of pupils, 2,074 remained throughout the year in regular attendance upon their classes, and a large majority of these obtained "certificates of proficiency," and other testimonials of excellent attainment in their several studies."

* * * * *

The announcement is made of the opening for the first time, of a free class in phonography and typewriting, for young women.

"Forty-two pupils obtained certificates of proficiency this year."—It will be noted that, in 1886, the Society of Mechanics and Tradesmen, following this example, also introduced such a class, in place of the Women's Free Drawing Class which they had before sustained. Seventy-six pupils in the class in Telegraphy are also recorded, all that there was room for; one hundred and sixty applied for admission. The Western Union Company pay a special teacher in this school to teach the thorough methods required in their work.

The next printed Report bears the date of May 28th 1887, and comprises the 26th 27th and 28th Annual Reports.* The Financial statements show for 1884, very nearly the same figures as the year before only the balance is on the right side, and there is a surplus of nearly four thousand dollars of income over expenditure, where there was a deficiency of the like amount the year before; but the year 1885, shows a great falling off in revenue and in expenditure, with a still larger decrease in 1886. The revenue for that year being \$27,699.83, and the total expenditure \$39,935.73,—The Night Schools and the Day School of Art, however, receive about the same as in 1883-4, although it no where appears in their reports, it seems most probable that to the erection of the additional stories in 1881, was due the alarming indications of insufficient foundations which made necessary the expensive repairs to the building described in the statement of the Trustees given in this pamphlet.

The following statement of the Trustees, explains the condition of affairs and records the liberality of the children of Mr. Cooper, who thus seek to emulate the good works of their Father. However, notwithstanding their generous contributions, the Trustees find it necessary to appeal to the public in behalf of this noble institution. No private means, no instances of individual generosity, are adequate to meet the ever growing needs of the public. Voluntary combinations of individual citizens, or the official action of the community, can alone provide the requisite facilities. This fact is nowhere more apparent than in matters of public education, and is the all sufficient reply to all cavils of theorists, against the undertaking of free popular education by the State.

"STATEMENT OF THE TRUSTEES.

The last Annual Public Celebration of the Cooper Union for the Advancement of Science and Art, was held on the 28th of May 1884. On this occasion the Trustees made a very complete statement in regard to the organization and objects of the Institution, and of the results which has been attained during a quarter of a century of its existence in the lifetime of its founder, the late Peter Cooper. Sub-

* The Twenty-sixth, Twenty-seventh and Twenty-eighth Annual Reports of the Trustees of the Cooper Union for the Advancement of Science and Art, May 28th, 1887. New York: Brokaw & Atwater, Stationers and Printers, 48 Broad and 46 New Streets, 1887, Pp. 44.

sequent to this anniversary it was discovered that the building required re-construction, in consequence of the insufficiency of the foundations. Upon a survey of competent architects it was decided that the work could not be deferred any longer without great danger to the building. It was promptly undertaken, but the structure was found to require much more extensive renewals than was supposed to be necessary at the outset. Two entire years have been occupied in practically re-constructing the building. The cost of this work has been very great, amounting to rather more than \$275,000. Meanwhile it was found necessary to close the Reading Room and Large Hall, but it was arranged to carry on the educational work, which has not been interrupted, although it has not been possible to hold any public exhibition during the last two years. The work of re-construction is now complete, but it has nearly absorbed the entire endowment which Mr. Cooper had provided for carrying on the Institution. During his lifetime the founder had given to the Trustees the sum of \$200,000 as an endowment fund, from which an income of five per cent. per annum was derived. By his will an additional sum of \$100,000 was added to the endowment, making a total sum of \$300,000. Mr. Cooper's children subsequently announced to the Trustees their intention to contribute the further sum of \$100,000 towards the endowment of the Institution, which made a sum total of \$400,000, the income of which would have been available for defraying the current expenses of the Institution. Of this sum there now remains, after defraying the cost of re-construction, and paying the debt of \$15,000 which has been incurred for carrying on the Institution in the interval, the sum of \$110,000, of which the annual income is \$5,500. The remaining income of the Institution is derived from the rents of the Great Hall and other portions of the building appropriated to business purposes. It may be assumed that these rents will produce about \$20,000 per annum, so that the net income of the Institution, as it now stands, will not yield more than \$35,500 per annum. From the experience of past years it is not believed that the annual expenditures for carrying on the Institution on its present scale of usefulness can be reduced below \$45,500 per annum. It thus appears that, owing to the exhaustion of the endowment fund, by the re-construction of the building, there will be an annual deficiency of at least \$20,000 per annum in the revenue of the Institution.

In this state of affairs the children of Mr. Cooper, Mr. Edward Cooper and Mrs. Sarah A. Hewitt, propose to make good the original endowment of \$300,000, thus defraying the entire cost of the re-construction of the building. But there will still be a large deficiency in the annual income to meet the current expenses, unless the operations of the Institution are restricted to narrower limits, and the various departments reduced to a smaller scale of usefulness than that on which they are now organized.

The Trustees have heretofore made known to the public the necessities of the Institution, and they can now only repeat that additions to the Endowment Fund will be most acceptable, and indeed are absolutely necessary, in order to meet the constantly increasing pressure for admission to the various privileges of the Institution. The applications to the Art School are more than a year in advance of the possibilities of admission. If the School were double in size, it would promptly be filled by the applicants for admission. The other departments of the Institution, especially the Night Classes, are crowded to their full capacity and require enlargement. The space exists in the building, but the funds are deficient for the necessary expenses. The Trustees regret to make any appeal for help, but in view of the obligations which the children of Mr. Cooper have under the peculiar circumstances of the case felt compelled to assume, they feel it to be their duty to lay before the public an exact statement of the condition and the wants of the great charity confided to their management, the usefulness of which could readily be doubled, if the means are provided to meet the necessary expenses. To bring the Institution up to the

full measure of its capacity, an endowment of One Million Dollars will not be too much. In the meantime the Trustees will henceforth be compelled to keep the expenditures within the income which can be got from the rented portions of the Institution, and the annual interest of the endowment of \$300,000 provided by the heirs of Mr. Cooper.

ATTENDANCE.

During the past year the number of pupils has been :—

	Students.
In the Woman's Art School.....	287
In the Stenographic and Typewriting Class.....	64
In the Telegraphic Class	58
Total female day scholars.....	409
In the Night School of Science.....	1, 122
In the Night School or Art.....	2, 267
Total male night scholars.....	3, 389

The average daily attendance at the Reading Room amounts to 1,800 readers. The free lectures on Saturday evening have attracted very large audiences, often exceeding the capacity of the Great Hall.

These figures serve to give an idea of the magnitude of the educational work carried on by the Cooper Union. Its beneficial results are felt in every department of art and business, and in every portion of the United States. Its graduates and pupils are making a record for themselves and for the Institution, which encourages the Trustees in the hope that the means will be forthcoming, not only for the present needs of the several departments now in operation, but for their early enlargement and more extended usefulness.

WILSON G. HUNT,
DANIEL F. TIEMANN,
JOHN E. PARSONS,
EDWARD COOPER,
ABRAM S. HEWITT,

Trustees.

COOPER UNION BUILDING,
May 26th, 1887."

The report of Dr. Zachos, the Curator, which follows the statement of the Trustees, begins by stating that the classes were kept open during the two years, extending from January 1885 to February 1887, occupied by the repairs. The reading room and other parts of the building were closed during this period. As showing the pressure upon the educational facilities of the Union he states that for the year 1886-7, there were four hundred applicants for admission to the Woman's Art School in excess of the 250 pupils who are all that can be accommodated; while four hundred and twelve failed of admission to the Evening Classes from the same reason; 1,823 scholars were, however, admitted to the Night Schools. He comments on the fact that many of the Day Art pupils are already earning money by private art work, 126 pupils returning an account of earnings amounting to \$22,682, and this, it is thought, is by no means a complete statement from all the pupils. He shows the resources and attendance of the re-opened Reading room; some sixteen hundred persons have consulted the special collection of Patent

Office Reports which are contained in "8,010 volumes of the specifications and drawings." He reports that the order and decorum shown by those who frequent the reading room on Sunday is unexceptional.

The report of Mr. R. W. Raymond, acting manager Cooper Union Lectures, recites that the Free Saturday Evening course of Lectures was resumed November 20, 1886, after an interval of two years. Three only of these lectures related, directly, or indirectly, to Art; though most of them called in the aid of graphic and pictorial illustrations.

Professor W. H. Goodyear, of New York City, gave an illustrated lecture on "Lessing's Laocöon." Professor Peter Winter, of Brooklyn, N. Y., lectured on "Drawing in Education, or the Power of the Pencil;" and Dr. Samuel Kneeland, of Boston, Mass., gave an illustrated lecture on "The Sculptor Thorwaldsen and his Works." The following is the manager's analysis in brief of the lectures of the course.

Of these seventeen lectures, one was without pictorial illustrations, one was illustrated with black-board sketches, one with paintings and charts, and fourteen with lantern views. The subjects were distributed as follows: Social Science, 1; Art, 2; Physiology and Hygiene, 2; Physical Science, 4; History, 1; and Travels (including descriptions and illustrations of scenery, architecture, etc.), 6.

Special thanks are due to Rev. Dr. Abbott, Professors Winter, Flint, Newberry, Plympton, Fairchild and Raymond, and Messrs. Plimpton and Douglas, who generously gave their services to the cause.

The Twenty-Ninth Annual Report* issued under date of May 26th 1888 contains the usual report of the Trustees, and the Reports of the Director and Principals of the several schools, of the Curator of the Free Library and Reading Rooms, and of the Manager of "the Free Saturday Evening Lectures for the People," held, during the winter, in the Great Audience Hall in the basement of the building; also, the usual Summary Reports of attendance, etc., and the list of donations to the Free Library and Reading Room.—There are of American and Foreign Periodicals 429 newspapers and 150 magazines on file, most of those published in this country, and some of the English publications are given by the publishers.—The publishers of the Lovell, and Seaside Libraries, also, contribute copies of all their issues. The names of all donors are given and their several gifts to the Institution are acknowledged by the Trustees. A list of the "names of all the pupils in the Free Night Schools of Science and Art to whom certificates have been awarded," of all the prize winners, and of the Graduates of the Night Schools; also a similar list of those to whom certificates and prizes have been awarded in the Woman's Art School, and in the Schools of Stenography and Typewriting, and the School

* "The Twenty-ninth Annual Report of the Trustees of the Cooper Union for the Advancement of Science and Art, May 26th 1888. New York: Brokaw & Atwater, Stationers and Printers, 54 Broad Street, 1888. Pp. 64."

of Telegraphy for Women, are given; as well as the list of the officers of the Cooper Alumni Association.—The programmes of courses of study in the Night Schools, and the list of the officers of the Cooper Union, and of the teachers of the Schools, make a very complete showing of the facilities and operations of this most admirable Institution. The following paragraph, with which the report of the Trustees closes, gives a concise showing of the work of the year. The Trustees again urge the need of additional endowments if the various educational activities of the Cooper Union are to be made at all adequate to the ever growing demands made upon them. They say:

“The Trustees have heretofore made known to the public the necessities of the Institution, and they can now only repeat that additions to the Endowment Fund will be most acceptable, and, indeed, are absolutely necessary, in order to meet the constantly increasing pressure for admission to the various privileges of the Institution. The applications to the Art School are more than a year in advance of the possibilities of admission. If the school were double in size it would promptly be filled by the applicants for admission. The other departments of the Institution, especially the Night Classes, are crowded to their full capacity, and require enlargement. The space exists in the building, but the funds are deficient for the necessary expenses. To bring the Institution up to the full measure of its capacity, an endowment of one million dollars will not be too much. In the meantime the Trustees will henceforth be compelled to keep the expenditures within the income which can be got from the rented portions of the Institution and the annual interest of the endowment of \$300,000 provided by the heirs of Mr. Cooper.

ATTENDANCE.

During the past year the number of pupils has been :

	Students.
In the Woman's Art School.....	297
In the Stenographic and Typewriting Class.....	47
In the Telegraphic Class.....	63
Total female day scholars.....	407
In the Night School of Science.....	954
In the Night School of Art.....	2,127
Total male night scholars.....	3,081

The average daily attendance at the Reading Room amounts to 1,800 readers. The free lectures on Saturday evening have attracted very large audience, often exceeding the capacity of the great hall.

These figures serve to give an idea of the magnitude of the educational work carried on by the Cooper Union. Its beneficial results are felt in every department of art and business, and in every portion of the United States. Its graduates and pupils are making a record for themselves and for the Institution which encourages the Trustees in the hope that the means will be forthcoming, not only for the present needs of the several departments now in operation, but for their early enlargement and more extended usefulness.

WILSON G. HUNT,
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ABRAM S. HEWITT,

Trustees.

The reports by the directors of the several schools will be found in their due order in the succeeding pages given to an account of these schools.

The Curator of the Free Library and Reading Room, reports the number of visitors to the Reading Room for the year, as 370,205, who have used 146,269 books and pamphlets, in addition to the large number of daily papers which are accessible to all.

Of the eighteen free Lectures, comprising scientific, literary and artistic subjects, as well as those of adventure and travel in other lands, delivered to large audiences, only the following were on artistic topics; "The Lotos Flower in Art," (Illustrated,) by Prof. W. H. Goodyear, New York City. "Conventional Art in Pictures and Decorations," and "The Wit and Wisdom of the Crayon." Two lectures (both illustrated) by Prof. W. M. R. French, Chicago, Ill. "Portrait of Christ," (Illustrated,) by Rev. W. H. Ingersoll, Brooklyn, N. Y. "A Talk About Photography," (Illustrated,) by Mr. Geo. G. Rockwood, New York City, and "Architectural Progress in New York," (Illustrated,) by Prof. William H. Goodyear, New York City. Many of these public lectures were illustrated with Lantern Slides.

Among endowments and gifts to the Institution, the fund of \$1,500 given by the Woman's Centennial Committee for aiding indigent Students in Woman's Art School, the several prizes given by various individuals and firms, the gift of \$250 annually by the Prang Educational Company, towards the salary of a Normal class teacher; gifts of books and papers, and the gratuitous services of Seven of the Lecturers, are also acknowledged by the Trustees.

The records during the year of various gifts to the Women's Art School, will be found in the report of that school by Mrs. Carter.

In the preceding account, the varied educational activities set on foot by the late Peter Cooper, and comprised under the common title of The Cooper Union, are recited in brief. The importance to any community of such a centre of light, with its impulses towards practical results, can readily be understood when once the direct working of its various instrumentalities are seen. It is evident that nothing is needed to greatly increase its usefulness to the community except additional funds.

As the gift of one man and his family to the public, the money value of which already amounts to some two millions of dollars, it furnishes a grand example of the wise direction of individual benevolence, and certainly presents a strong claim for the co-operation of other like benevolent citizens of wealth.

While, perhaps, for a time, the fact that an institution bears the name of its founder, may deter others from giving, yet in the case of institutions of learning this has not proved a permanent disadvantage; the benevolent of many generations have given freely of their means to enlarge the resources of the venerable institutions that

bear the honored names of Yale and Harvard, while a Younger University founded long after the first opening of Mr. Cooper's "Union," which latter might well be called the Peoples' Free College, has benefitted by the gifts of many other generous givers since Ezra Cornell, first laid its broad foundations. So that, with their knowledge of the practical usefulness of the Cooper Union, and in view of countless other precedents similar to those just indicated, it would seem only natural that many other wealthy citizens of the City of Peter Cooper, would be glad to aid in promoting and developing the great institution which he had the heart, the enterprise and the far seeing wisdom to found. It is, however, evident that, as yet, no one outside of his immediate family circle have thought fit to contribute to these ends, further than the giving of a few prizes to be awarded to the students for proficiency in their several studies.

The account of Cooper Union was here closed with the list of officers and instructors. The delay in issuing the present volume caused by the need of preparing the volume recording the movement for industrial training in the public schools, (Part II of this Report) has been sufficiently noted elsewhere; the history of Cooper Union and its schools, is now, June, 1892, when these pages are in the hands of the printer, to be continued and brought down to the year 1891, as contained in the Report for the year ending the twenty-ninth of May of that year.

In the 30th Annual Report* the Trustees give the statistics of pupils in attendance as follows:

ATTENDANCE.

"During the past year the number of pupils has been:

	Students.
In the Woman's Art School	310
In the Phonography and Typewriting Class.....	50
In the Telegraphy Class.....	34
Total female day scholars	394
In the Night School of Science.....	980
In the Night School of Art.....	2, 147
Total male night scholars.....	3, 127

The average daily attendance at the Reading Room amounts to 1,500 readers. The free lectures on Saturday evening have attracted very large audiences, often exceeding the capacity of the great hall."

The Curator of the Library gives the following interesting statistics showing a great increase in the attendance on the Reading Room and use of the Library.

*The Thirtieth Annual Report of the Trustees of the Cooper Union for the Advancement of Science and Art. May 26th 1888. New York. Edward V. Brokaw, Stationer and Printer, 54. Broad Street. 1889. Pp. 63.

"Of the bound volumes in the Library (which now number 21,276) 168,671 were drawn by the readers in the course of the year. Of this number 48,945 were in general literature, including history; 10,927 in general science, including natural and physical science and the practical arts, and 28,870 works of fiction. This enumeration exhibits the choice and selection of the readers as to the books used; showing a preponderance largely in favor of literature and fiction over books of a scientific character.

The number of visitors to the Reading Room during the past year has been 572,097, of which 7,081 were females. These readers have used 212,665 books, pamphlets and magazines, which are all obtained by checks, besides consulting freely the papers at the stands and desks."

Of the twenty public lectures given, only one was on "Art," meaning the graphic and plastic arts; a lecture on the "History of the Development of Sacred Music," Illustrated by a solo singer and by a Church choir, given by Mr. George G. Rockwood, would come under the comprehensive term Art.

The Art lecture proper was an illustrated lecture on "Greek and Modern Sculpture," given by Professor W. H. Goodyear, who was formally connected with the Metropolitan Museum.

In the 31st Annual Report* the Trustees remark on the needs of the Library, and announce the proposed enlargement of room for the Woman's Art School. They say:

"Some complaint has been made, at times, in regard to the inadequate supply of books in the library. There is just ground for criticism, although it really is surprising, considering the usage to which the books are subjected, that the library has been kept up at all. The latest books of reference have been procured, and recently a very timely donation of one thousand dollars, by Mr. John E. Parsons, one of the Trustees, has permitted the correction of the most glaring deficiencies. But the books are literally worn out by constant use, and hence the library cannot be kept in a satisfactory state, except by the generosity of citizens who appreciate the peculiar and beneficent influence of this agency in overcoming the allurements of dissipation and vice in this great city.

Notwithstanding the fact that the current expenses of the institution absorb its entire income, the Trustees will be compelled during the present year, to appropriate a portion of the principal of the endowment fund to the preparation of the upper floor of the building for the uses of the Women's Art School, which has outgrown the space heretofore appropriated to it. This expenditure, long contemplated, can no longer be deferred without seriously crippling the usefulness of the school. It is the intention of the Trustees to reconstruct the upper portion of the building, so as to make the arrangements conform to the experience which has been gained here and elsewhere in the conduct of art schools. About fifty thousand dollars will probably be required for this purpose, but the accommodations will be greatly enlarged, and a large number of additional pupils can be instructed. There will be a loss of revenue to the extent of twenty-five hundred dollars a year from the endowment fund, which will have to be made good by the contributions of those who are interested in the increase of usefulness of this school, which has put lucrative employment in the way of the many deserving pupils who have enjoyed its advantages.

The Trustees submit this statement to the public in the confident hope that they

* "The Thirty-First Annual Report of the Trustees of the Cooper Union for the Advancement of Science and Art. May 29th, 1890. New York. Edward V. Brokaw, Stationer and Printer. 54. Broad Street. 1890. Pp. 67."

will receive substantial assistance in executing the plans under contemplation, which will greatly enlarge the opportunities to the many young men and young women who cannot otherwise procure the instruction which is necessary for their advancement in life, and the prosecution of a useful career.

The Trustees in conclusion desire to make their acknowledgments to the various officers, teachers and employes of the institution for the conscientious fidelity with which their duties have been discharged and for the great success which has crowned their unselfish labors.

WILSON G. HUNT,
EDWARD COOPER,
DANIEL F. TIEMANN.
JOHN E. PARSONS,
ABRAM S. HEWITT,

Trustees.

MAY 29, 1890."

From the reports of the principals of the schools the following statistics of attendance are taken. The Director of the Free Night Schools says:

"The number of admission tickets issued to applicants for the art school was 2,096. Of this number 545 failed to present themselves. The number of applicants who failed to gain admission for want of room was 789. The total number of admissions to the scientific department was 1,009. This is the sum total of the class lists and represents 416 different pupils. Fully 300 more availed themselves of the privilege so freely granted here and became regular attendants at the lectures without registering their names.

The full three years' course in Chemical Analysis has been completed by five pupils who are therefore entitled to the diploma for this course.

The highest class this year in the scientific department has numbered nineteen pupils, of whom twelve having completed the prescribed course, are entitled to the medal and diploma. * * * . For the season of 1889-90, 693 persons applied to come here, and since the books were opened March 1st of this year, we have had 433 names registered for October, 1890. Since October 1st, 1890, 285 persons have studied in the free school and 127 in the pay classes, a total of 412; 431 scholars are now in the former classes, and 74 in the afternoon."

Of the eighteen lectures given, the only ones on Art were two by Professor William Goodyear of New York City, one on "Michael Angelo," and the other on "Decorative Art Movement in Ornamental and Suburban Architecture," both illustrated.

Among the various gifts recorded including the usual "prizes," various books, magazines, papers, and the free services of several lecturers, were three important additions to the collections of art articles and books. The Misses Hewitt and Mrs. Amy Green, gave a selection of 118 plaster models of French Decorative Art of the period of Louis XV, and Louis XVI, also art books, journals, etc. The models being a selection from the "Museum of Industrial Art," in the "Palais de l'Industrie," Paris. To duplicate the collections of this Museum would cost about \$10,000. This collection cost about \$1,200, when delivered at the Cooper Union Building. The second gift comprised eight marble statues and one bronze Statuette, from the estate of the late Miss Catharine C. Tallman,

given to Cooper Union by Mrs. Sarah Tallman. The third gift by John E. Parsons, Esq., was the sum of \$1,000 to the public library and \$500 to the special library of the Woman's Art School.

From the next Annual Report,* the final one which can be consulted for this history, as these pages are now being rapidly put in type, the records of two noticeable events are taken. These events are full of significance; the one as to the Institution itself, which by this great gift, becomes, as we may reasonably expect, an object of popular munificence; just as have other well established colleges, universities and museums, bearing the honored name of a founder; whose name soon comes to be but the first, in a long and ever growing list of liberal givers.

The fact that the president of that ancient and aristocratic institution of higher learning known as Columbia College, delivered before this institution of the people, the commemorative address on the occasion of the Centennial Anniversary of the birthday of Peter Cooper, furnishes another instance of the movement for popularizing Higher Education which, not long ago, was begun in Great Britain, where the Universities had long been practically separated from the people by a great gulf; and which has found its way across the Atlantic to this country, although here,—with our system of free schools and our hundreds of excellent colleges scattered all over the land, in which many generations of American scholars have been well trained,—there existed no such crying need as in England, for "University Extension." Such educational enterprises as those of Chautauqua and the many kindred summer schools, with the Reading Circles, and courses of popular lectures, having, in the United States, long anticipated this Anglican movement; which, a stranger might suppose, from the zeal of some of the English missionaries and their recent American converts, was an hitherto unknown element in American educational and social life.

It is well, however, and very natural to Americans, that all homage should be paid by University bred men, as by all others, to such men as Benjamin Franklin, Abraham Lincoln, and Peter Cooper, whose lives have honored and helped Humanity.

The prominence given by President Low to an account of the inventive genius of Peter Cooper, and to his readiness to grasp the practical needs of the day, meeting them by bold and original devices, gives added interest to this admirable tribute to the man and the Philanthropist.

PETER COOPER.

[An address delivered by the Honorable Seth Low, the President of Columbia College, at the Centennial anniversary of Mr. Cooper's birthday.]

It is natural that in the Cooper Union the centennial of Peter Cooper's birth should be celebrated. But I am wholly mistaken in my estimate of the man and

*"The Thirty-second Annual Report of the Trustees of the Cooper Union for the Advancement of Science and Art, May 29th, 1891 Pp. 78.

of his work, if this gathering within the Institute itself is anything less than the local expression of a sentiment which is universal in the City of New York and general throughout the land. The men of this generation know well that Peter Cooper was a great philanthropist. They do not know so well how remarkable a man he was in other directions. Neither his philanthropy, nor the financial ability to manifest it by princely gifts, were accidental. Both, alike, represented the fruition of a patient purpose steadfastly pursued through long and laborious years. It is a true instinct which leads men from time to time to review the story of such a life, for such lives minister to that which is best within us, as the rain refreshes the earth. When one remembers that it is barely eight years since Peter Cooper died, it is startling to hear him say in one of his later addresses: "When I was born New York contained 27,000 inhabitants. The upper limits of the city were at Chambers street. Not a single free school, either by day or night, existed. General Washington had just entered upon his first term as President of the United States."

THE AMAZING DEVELOPMENT OF SCIENCE AND ITS APPLICATIONS TO HUMAN USE
DURING THE PRESENT CENTURY.

In these brief sentences we are introduced at once to one of the influences which moulded Peter Cooper into the man he was. To a singular degree he was the child of the times in which he lived, in some of their most characteristic aspects. It is hard for us who have known no other times to appreciate how different is life to-day, in its most familiar features, from what it had been for many centuries before Peter Cooper's birth. The old men among us can tell how great is the change since their own childhood. But those of us who are younger are separated from the past of Peter Cooper's youth by an interval of change which even the imagination can scarcely comprehend. Consider, for example, the single illustration of artificial light. It seems to us as natural that there should be gas and electricity, matches and kerosene lamps, as that there should be air to breathe and water to drink. One need not, indeed, be very old to remember when there was no such thing as the electric light, but it staggers us if we try to imagine a time when gas, and matches and kerosene were equally unknown. Take these things from us now and the world would be in darkness indeed. But Peter Cooper was born into a world which knew not one of them, which never had known any of them, and whose habits were adjusted, as men's habits had been for centuries, to the meagre opportunities as to artificial light which then prevailed. Great men were developed under these restrictions, to be sure, but greatness seems always to flourish on the conflict with hardness. See how Abraham Lincoln learned to read, laying the foundations of that limpid style through which his great personality expressed itself in phrases never to be forgotten, by the light of burning chips, carefully lit, and tended through the brief moments of their flaming life, as he sat by the evening fire-side after the day's work was done. It is not the light, but the eye which looks, which determines the vision; and yet it is better to dwell in the light than in the darkness. My illustration has served its purpose if it has helped you to realize what an age of invention the last one hundred years have been. All the centuries which preceded them scarcely together reaped so rich a harvest. These earlier centuries did, indeed, prepare the way for this one; but the slow processes of the centuries have culminated in this era.

PETER COOPER'S BIRTH WAS COEVAL WITH THE NEW ERA OF INVENTION.

At the beginning of this fruitful era Peter Cooper was born. True child of the times, the spirit of inventiveness was his playmate. Through all his busy years she communed with him as with a friend. His successes were achieved in several fields, but pre-eminently he is identified with the advances made in the art of

locomotion. Travel by land, travel by water, travel through the air, all claimed his attention. The Spaniards say of a narrow minded man, a man of confined and restricted views: "Oh, he has never been seasick." One might almost imagine that Peter Cooper was constrained in his inventions by a similar belief in the importance of travel.

In 1808, when 17 years old, he apprenticed himself to John Woodward, of the firm of Burtis & Woodward, leading coach builders of the day in this city. During the evenings he would spend his time, for the most part, in a little room fitted up by his grandmother, where he practiced himself in all sorts of undertakings. First he learned ornamental wood carving, apparently because he could make it a source of profit by selling the carving to his employers. But the spirit which impelled him to study the ways of locomotion soon laid its hands upon him, and then he began to make all his own shoes. We are not told whether in this field he made any permanent impression, but when he turned his attention to the problems involved in wagon building, he did. He invented about this time a machine for mortising the hubs of carriages, till then done by hand, of which he was able to say, in 1879, that all the hubs in the country were still mortised by that method. It is sometimes cited as a wonderful illustration of the ability of Alexander Hamilton, that he devised and put into operation as the first Secretary of the Treasury the method of bookkeeping which is still in use by the United States Government, a method which, beginning in the day of small things, has adapted itself easily to the immense operations of the Treasury Department in these later days. I submit that it is a deed not unworthy to be compared with this achievement, to have devised a method in the first decade of the century which in 1879, and I presume to-day, is still in use in the manufacture of every wheel which runs upon our roads. So Peter Cooper won his first enduring victory in the cause of readier locomotion.

He next turned his attention to the canal boat. Those of us who are accustomed to the steamboat and the railroad may find it difficult to realize that at one time the Erie Canal furnished the readiest and best way to reach the region which was then called the West, that is to say, the territory now comprised in the States of Ohio, Indiana and Illinois. But the fact remains. And, therefore, it is natural to find Peter Cooper early at work in endeavoring to perfect a method of locomotion on the canals by means of an endless chain. He carried his plan so far as to patent it, and it seemed probable at one time that it would be used upon the canal. But it was abandoned, according to his own explanation, though I do not use his own words, because mules voted, and the owners of mules had no use for an endless chain. At all events, some fifty years later, the President of the Camden and Amboy Canal Company hit upon the endless chain plan for carrying boats through the locks. Finding that it worked well, this gentleman proceeded to Washington to patent the device, only to learn that he was half a century behind Peter Cooper. Mr. Cooper's experiments with boats, for he tried in other ways also to improve boat travel, were not so successful as those which had to do with travel by land.

PETER COOPER A PIONEER IN THE DEVELOPMENT OF STEAM LOCOMOTION.

It would have been strange, indeed, if such a man had lived through the era of the introduction of steam locomotives without being heard of in connection with the movement. How important was his service in that direction appears from the language of the invitation extended to him in 1880, to attend the semi-centennial of the Baltimore and Ohio road. "In this invitation," so ran the words, "it is desired to signify, not only the respect that is entertained for your personal work and deservedly high character, but the deep sense of obligation for the service you rendered, when, in the summer of 1830, you demonstrated on the Baltimore and Ohio Railroad, that its 'high curvatures'—to use the words of the chief engineer—would

not prevent the successful application of the locomotive engine, and although with our present lights we wonder that such a demonstration was then deemed necessary, you are not the less entitled to the credit of being the pioneer in the application of steam to American railways."

The circumstances which led to Peter Cooper's connection with this problem are both interesting and instructive. The philosopher has been laughed at who remarked, as a singular circumstance, that a great river ran by the side of every great city, because it did not occur to him that the presence of the river accounted for the location of the city; but one would scarcely have conjectured that the absence of a canal would have accounted for the location of one of our earliest railroads. Nevertheless, so it was. New York, Philadelphia and Baltimore are old-time rivals for the trade of the West. In the early part of this century, when the three brothers came over from England who founded the now famous banking house of Brown Bros. & Co., the youngest of the three was assigned to New York as the least important place. The subsequent completion of the Erie Canal gave to New York a supremacy it has never lost. Philadelphia also succeeded in securing some sort of a waterway into the interior, but Baltimore found itself hopelessly shut off by mountains which the canal boat could not pass.

ORIGIN OF THE BALTIMORE AND OHIO RAILROAD.

So deep was the gloom in Baltimore in 1824 and 1825, that the city appeared to be doomed. Then came the tidings of cars drawn by steam in England, and Baltimore took heart of hope. In 1827 the Baltimore and Ohio road was chartered and the State of Maryland and the City of Baltimore was authorized to subscribe for stock. A great fever of speculation seized upon the people. Peter Cooper was so far influenced as to make large purchases of real estate in the favored city. He became jointly interested with two others in 3,000 acres of land within the city limits of Baltimore. This land ultimately he was obliged to pay for and carry himself. It is characteristic of the man, and it reveals, I submit, a fine quality of courage as well as great readiness of resource, that his attention to the railroad problem was immediately due to the effort to save himself from loss on this real estate speculation. The Baltimore and Ohio road had laid a track for 13 miles, which was operated by horses, and this track ran through or near Peter Cooper's land. The horse-car line did not pay, and the land speculation was threatened with disaster. Peter Cooper therefore turned his attention to steam as the proper motive power for this road. At one point there was a sharp turn of 150 feet radius. Stephenson, the great English inventor, was reported to have said that steam could not be used as a motor on any curve with less than a 900-foot radius. Peter Cooper believed he could demonstrate that it could be. With incredible perseverance he built the "Tom Thumb" the first locomotive built in this country for experimental use upon a regular railroad, in which he successfully overcame the mechanical difficulties involved. The "Tom Thumb" made the sharp curve and covered the distance, 13 miles, in 1 hour and 12 minutes. The return trip, on a down grade, was made in 57 minutes. This was in August, 1830. It throws a vivid light upon the times to be told that Peter Cooper could find no iron pipes for tubing for the boiler. There were no iron pipes for sale in the country. He surmounted the difficulty by using the barrels of muskets. And so the speculation was saved, a great advance was made in locomotion by steam, and Peter Cooper's name was properly hailed, fifty years afterwards, as that of the "pioneer in the application of steam to American railways."

AEROSTATION.

A man who has surmounted many obstacles and solved many problems, doubtless is tempted as other men are not to think that he can solve any problem. It is not surprising, therefore, to learn that Peter Cooper a few years later en-

deavored to solve the problem of navigation of the air: and it is quite in line also with his genius for improving methods of travel. An accident in this connection almost cost him an eye, and it does not appear that he persisted in the attempt after this mishap. The Duke of Argyle, in his admirable book, "The Reign of Law," points out why all attempts to navigate the air have thus far failed. The balloon is made lighter than the air in order that it may rise. Being lighter than the air, it is the sport of the winds. A bird, on the other hand, is heavier than the air, and falls to the ground the moment life leaves him. Because he is heavier than the air, he can breast the winds at his pleasure. The problem of aerial navigation is to devise a machine which can lift itself by the application of power acting upon a medium lighter than the machine itself, that is, the air. Until this is done, men must be content for practical purposes to traverse the land and navigate the seas. I have sometimes thought the ready inventiveness of Peter Cooper's mind, which was undaunted even in the presence of the problem of flying, largely explains his views in reference to the currency. It was not an objection apparently, in his view, that experience did not sustain his opinions concerning the greenback. He seems almost to have believed that a new currency could be invented as easily as a new locomotive; but most men who have studied the subject have come to believe that the laws which govern currency are as unchangeable as those which determine the problem of flight through the air. Paper money is good as long as it is kept exchangeable for coin. Deprive it of this exchangeability, or throw doubt upon it, and the paper becomes at once valueless or depreciated, whether the government which issues it is strong or weak.

SUCCESS OF AN INDUSTRIAL INVENTION BY PETER COOPER.

I have been interested in pursuing Peter Cooper's inventions along this line, in illustration of my original proposition that he appeared to be determined to make it easier for men to move about. But his inventiveness did not exhaust itself in this field. It is characteristic of the man that the foundations of his fortune rested on an invention. In early manhood he purchased a glue factory, at a time when the foreign article commanded a preference in our market despite a heavy duty. Before long he had won the field for his own product. Especially this result was due to a patent taken out by him in 1830, and from that time on his business in glue became the chief source of his financial strength.

I have said enough surely to justify the claim that on the side of inventiveness Peter Cooper was one of the remarkable men of a remarkable generation. In this, I pointed out to you, he was a true child of his times. But these times have had other characteristics not less noteworthy, and Peter Cooper was a true child of his times in these respects also. The times have been times of radical and incessant change, and great and continuous changes involve great suffering for many people. The times have been marked by a steady growth in the power and intelligence of the masses. To both of these tendencies Peter Cooper's nature responded with ready sympathy. He loved to identify himself with the laboring men from whose ranks he claimed he himself had sprung. Certainly he never lost his sympathy with the multitude, and men felt for him while he lived the same affectionate regard which they now feel for his memory.

DISASTROUS EFFECTS OF INDUSTRIAL CHANGES IN METHODS OF MANUFACTURE AND IN WAYS OF COMMUNICATION.

An age of invention is necessarily an age of change. The habits of the world following a great invention do not change instantly, but gradually and imperceptibly. Watch the course of two steamers leaving the harbor of New York, the one bound for Liverpool and the other for Gibraltar. For a little time the path of both

seem to be identical; the divergence at first is scarcely noticed; at last it becomes clear to all. So it is with the changes in the habits of men which are wrought by a great invention. So recently as 1870, when I was graduated from college, the business with China and the East was still carried on largely by means of sailing vessels, just as it had been from the beginning. The vessels were larger and swifter than in the days of Columbus, but the business methods in that trade, though already threatened, had scarcely then been very seriously affected. Vessels were still loaded for account of their owners, and the old-fashioned merchant had still a name to live. The cloud "no bigger than a man's hand," however, had arisen above the horizon. The establishment of the Pacific Mail line of steamships in 1867, and the subsequent completion of the Pacific Railroad, gave a means of access to the East entirely new in history.

The submarine cable under the Atlantic, and the extension by land of telegraph lines towards China had even before this materially reduced the time in which communication could be had with those distant places.

In 1872 the Suez Canal was opened, and this, with the perfecting of the telegraph and cable systems, brought old conditions to an end, almost before any who were exposed to the changes were able to realize their full extent. In less than twenty years since then the old-fashioned merchant, to use a phrase of one of Peter Cooper's contemporaries, had become "as extinct as the mastodon." With few exceptions, if any, all the mercantile houses, identified with the old manner of business in the trade with China, who had no other business, have either failed or retired. Those who could, have adopted the latter course, and those who were unable to do this, kept up the hopeless struggle until forced to the wall.

I have chosen this illustration because it makes clear that in times of such rapid and fundamental changes, no class in the community escapes. Some might have thought it easier to demonstrate the effect of modern inventions, by pointing out the changed conditions surrounding artisans and day laborers, and all manner of working folk; but then there might have been danger that these would think that they were the only people so seriously affected. Yet we all know they have been seriously affected.

THE RISE OF THE FACTORY SYSTEM.

One of the most marked changes affecting them, of the period covered by Peter Cooper's life, has been the development of the factory system with the accompanying division of labor that has resulted from the substitution of machinery for human hands. Such manufacture as was carried on a hundred years ago, was carried on largely in the home, and by groups of men working together in small establishments. The substitution of machinery for the human hand necessitates, of course, a power adequate to drive the machinery. This power has been found in the waterfall and in the steam-engine. In either form it has compelled the erection of factories, either by the side of the waterway or elsewhere, on a scale large enough to permit an engine to drive much machinery. This has resulted in the massing together of hundreds and even thousands of people in the immense mills of modern times. In other words, philosophically speaking, the factory system is largely the result of the necessity of concentrating machinery close to the power that is to drive it.

FURTHER CHANGES TO BE WROUGHT BY DEVELOPMENT OF APPLICATIONS OF THE POWER OF ELECTRICITY.

To-day there are not wanting those who believe that the development of electricity may produce an effect on the condition of manufacture, in a contrary direction, scarcely less striking. Already it has been demonstrated that power may be developed by electricity at a distance of a mile or two from the spot where the power has been generated. There is in New York to-day at least one loft where

women are using sewing machines driven by electricity, in the better light and air of the top of the building, who formerly would have been obliged to work on the lower stories in order to be near the power which is generated in the basement. Such facts as these in themselves have not much importance, but they are very suggestive. It is only a few years since the telephone surprised even this age, accustomed as it is to the marvelous deeds of science. In its beginnings the telephone was imperfect, but already the long-distance telephone is carrying the accents of the human voice a distance of hundreds of miles. Doubtless, therefore, they are right who believe that the transmission of power by electricity is only in its infancy, and no one may be bold enough to say that such a capacity, when fully developed, will not again radically change the methods of industry and the conditions of life of those who are thus affected.

PETER COOPER SAW THE DANGER IMPENDING TO THE WORKINGMAN FROM THESE CHANGES.

Peter Cooper, with a prescience which was perhaps only another expression of his inventive genius, appreciated the gravity of these changes to which working men are exposed. His large heart filled him with sympathy for the suffering which he knew was inevitable as to individuals during such a period. Although he did not himself enjoy educational advantages in his youth, he became in some directions a highly educated man, and he divined the importance of education to those who were compelled to confront life in times like these. The man who could do but one thing, he perceived, was always in danger of having no chance to do that thing. The man who understood even a few of the scientific principles so general in their application to modern life, he saw, would be much better equipped for the struggle.

PETER COOPER KNEW HOW BEAUTY ADDED VALUE TO THE PRODUCTS OF INDUSTRY.

One of the consequences which frequently results from the division of labor is to make one's work more interesting than before. There is certainly a pleasure to the mind in the production of a completed article, which oftentimes must be lost in the production through machinery of insignificant parts of such an article. Therefore, one cannot help believing that Peter Cooper dedicated this Union to Science and Art as an expression of his belief in the importance of art as an element in life, not less than his belief in the advantage of knowledge. It is as though he would have said to all men: knowledge and beauty belong together; the beauty of life appears in its completeness only when it is lived with the highest intelligence. In certain directions of manufacture, such as manufactures of silk, the French have always sustained a position of pre-eminence. When one asks why, it is only a partial answer to be told that they have good taste. You must go deeper than that. Then you will ascertain that they speak of their weavers, not as "hands" but as artists, and they maintain in the principal centers of manufacture schools of design wherein the children of the workmen are taught that labor and beauty are to go hand in hand through their lives. Such, in part at least, it seems to me, was Peter Cooper's conception in dedicating this Union to Science and Art—Science, he believed, would make life intelligent; Art, he believed, would make it beautiful. Knowledge, it is said, is power; but beauty makes for fullness of life.

RECOGNITION OF THE MASTERY OF KNOWLEDGE AND THE INSPIRATION OF BEAUTY ESSENTIAL TO THE ARTISAN WHO WOULD BE AN INDEPENDANT CITIZEN OF THE UNITED STATES.

I think, also, he was moved by another thought. It has been no accident, as it seems to me, that the era of modern industry began with the revolutionary years of the last century. The American revolution and the revolution in France which

followed it, mark the turning point between the era of privilege and what Mazzini calls "the era of duties." Class distinctions depend on privilege. The rights of man, as the great Italian says, imply the duties of man. In the olden day the workman was indentured to his master. He lacked freedom, but he had a certain security. Under the wages system, the workman has freedom, but he lacks security. It is doubtless the higher condition, though it be so full of perils. I am sure that Peter Cooper had it in his mind that the working man, because he was socially and politically free, in order to be truly free must have some education. He must have felt that to give unlimited power to ignorance, if it were to remain ignorance, was to expose civilization itself to hazard. For this reason, also, he builded the Cooper Union and dedicated it to Science and Art, in order to testify that power, to be worthily exercised, must recognize the mastery of knowledge and the inspiration of beauty. He had an abiding faith in education, but he had the wisdom to perceive that education should be adapted to the needs of those who seek it. He sought to build here an institution adapted to meet a certain need. It involved no criticism of other agencies. It simply filled a gap in the line which, by practical observation, he had seen was wide open, and which he believed ought to be filled.

STEADFASTNESS OF PURPOSE.

There is one circumstance connected with this gift which in my mind gives to it peculiar value. The Cooper Union is not the fortunate result of a generous impulse. It embodies the fulfillment of a purpose steadfastly cherished and steadfastly pursued through many years. Nothing is finer, I think, than the deliberate way in which Mr. Cooper secured the land on which this building stands. As his means allowed, he bought one lot, and then he bought another and another, until finally the whole block came into his possession. Naturally, he paid much higher prices for the later purchases than for the earlier. It throws an added light upon his character, and gives to it a new lustre, to know that he began the execution of his purpose long before he was in a position completely to fulfill it. I remember to have read of the late Marshall O. Roberts that when he was a boy in an office he noticed in the window of a store on Fulton street a picture that fascinated him. Whenever he was sent out upon an errand he contrived to pass that picture, and even as a boy he determined that some day he would own it. That picture was the first he ever bought; and that picture was the foundation of a collection of paintings that in its day was famous in New York. This same steadfastness of purpose marked Peter Cooper's philanthropy. It was a part of his nature. His philanthropy expressed itself, by the way on every occasion, and he worked patiently for many years of his life towards the culminating expression of it which has found lasting form in the Cooper Union.

HOW THE IDEA OF FOUNDING THE UNION AROSE IN MR. COOPER'S MIND.

I may not here detain you with an account of what the Cooper Union has done. Many of you know better than I, because you have been a part of it, but it may be interesting to some of you to be told how Peter Cooper's thoughts came to be turned in this direction. For this purpose I must remind you of the sentence from one of Peter Cooper's speeches, which I quoted at the beginning of this address, in which he said that at the time of his birth not a single free school, either by day or night, existed in the City of New York. In 1805, DeWitt Clinton, oppressed by this state of affairs, obtained a charter from the Legislature to incorporate "The Society for establishing a Free School in the City of New York for the education of such poor children as do not belong to and are not provided for by any religious society." By this society was established the first free school opened in the City of New York subsequent to the War of Independence. You will all remember DeWitt Clinton as

the man whose name is forever identified with the construction of the Erie Canal. He was Governor of the State of New York and Senator of the United States, and he enjoys the unique distinction of having resigned his office as Senator of the United States in order to become Mayor of the City of New York.

VALUE OF INSTITUTIONS OF LEARNING TO A COMMUNITY.

You will not deem it out of place, I am sure, if I remind you that he was also a graduate of Columbia College. I speak of this because it illustrates in an interesting way the benefits which a city derives from the presence in its midst of a great institution of learning. There were universities, and universities of the highest order, long before there were common schools. It is in line, therefore, with the history of education everywhere, that the free school system of New York should spring, in a certain sense, from the teaching of Columbia.

BEGINNING OF FREE SCHOOLS IN NEW YORK CITY.

But to return to the Free School Society. The first school-house was built in 1809. The schools multiplied, and the Legislature after a while imposed a tax for their support, and funds from other sources came in abundantly. De Witt Clinton remained at the head of the board for twenty-five years. In 1838, Peter Cooper became a member of the Board of Trustees of the Free School Society. In 1842, a Board of Education for the City and County of New York was established by an act of the Legislature, and from that time until 1853 the work of free education in New York City was divided between the Free School Society and the Board of Education. In 1853, these two bodies were amalgamated by an act of the Legislature, and the work of the Free School Society was merged in the work of the Board of Education. Peter Cooper served for two years as Vice-President of the Board of Education, resigning on January 1, 1855. Thus for seventeen years he had been brought into personal contact with the work of free common school education in this city. That he had been deeply interested in it no one who understands the intensity of his nature can doubt; but he seems to have conceived the idea partly as the result of this experience, that something more was needed to meet the needs of the time than the education which could be given in the public schools. This Cooper Union, dedicated to Science and Art, is the outcome of that conviction. It aims to give:

"1st. Instruction in the branches of knowledge which are practically applied in the daily occupations of the working classes by which they support themselves and their families.

"2d. Instruction in the laws by which health is preserved and the sanitary condition of families improved—in other words, personal hygiene.

"3d. Instruction in political science, by virtue of which communities preserve themselves and nations progress in wealth and power.

"4th. Instruction addressed to the eye, to the ear, and the imagination, with a view to furnish a reasonable and healthy recreation to the working classes after the labors of the day."

No one can listen to this summary of its purposes without appreciating that the Cooper Union is the worthy monument of a wise and good man. But the Cooper Union is more than a monument. It is more, even, than an educational institution of highest value to those who are fortunate enough to be numbered among its students. It is the eloquent and enduring expression of one of the profoundest teachings of Peter Cooper's long and useful life. It is as though he were still saying, through this Union, to the rich men of New York, that the obligations of wealth are not fully met unless wealth is made to minister to the good of the community with a no less serious and steadfast purpose than it is made to minister to one's own advantage.

WHAT MAKES A CITY GREAT?

In this city Peter Cooper made his wealth, and this community he made sharer in his great prosperity. New York needs more such men. Powerful in her superb location, powerful in illimitable resources, it still may be asked of New York as of ancient Rome, "What is the city but the people?" Unless the love of New York can animate the hearts of her citizens, unless those who are prosperous in the city give heed to the call which chivalry pronounced "noblesse oblige," there will be here no doubt a great aggregate of men, but there will not be a city great in history as one of the centers which have illumined and ennobled the world. Wealth is power, knowledge is power. But it is the man behind the power that determines its usefulness. It is the glory of Peter Cooper that he used his power well.

It is not alone the fact that it contains this admirable address by President Low, just quoted, that makes this 32nd Annual Report by the Trustees of Cooper Union the most notable of the series; for, as if to pay double honor to the memory of the great hearted Founder in the centennial year of his birth, the Executors and Trustees of the Fayerweather estate established a permanent and adequate Endowment Fund for the support of The Womens' Art School. Their action is recorded in the annual statement which follows.

STATEMENT OF THE TRUSTEES.

During the year which is brought to a close by the exercises of to-night two events have occurred which will make it memorable in the history of the institution. The centennial anniversary of the birthday of Peter Cooper, the founder of the institution, occurred on the twelfth of February last, and was celebrated with suitable ceremonies which were organized spontaneously by the Alumni, and carried out under their direction with great enthusiasm and success.

The oration on the occasion was delivered by the Honorable Seth Low, President of Columbia College, and was received with great applause by the audience which filled the hall to overflowing. It is deemed only fitting that the admirable production of President Low be printed and circulated with this report, because it presents the character of Mr. Cooper, from a contemporaneous point of view, in a light which will always be interesting to posterity.

The address of the Honorable James Fitzgerald, Judge of the Court of Sessions and a former pupil of the institute, was listened to with great satisfaction as showing the profound appreciation of the Alumni of the advantages which they have received from the great benefaction of Mr. Cooper.

THE FAYERWEATHER BEQUEST TO THE ART SCHOOL FOR WOMEN.

The other event which has made the year memorable is the action of the executors and trustees of the will of Daniel B. Fayerweather, in appropriating the sum of \$200,000 as an endowment fund, to be forever kept separate and apart for the support of the Art School for Women, which has formed a prominent feature of the institution from its foundation. This endowment will come at a peculiarly fortunate juncture in the development of the institution. For many years the demand for the privileges of the art school has been far in excess of its capacity. There have always been waiting for admission applicants greater in number than the school actually cares for at any one time. This fact has indicated that the school should be enlarged, and, when doubled in capacity, will not even then be sufficient to receive all who desire to become pupils. This state of affairs had decided the Trustees to reconstruct the two upper floors of the building so as to provide

ample accommodations both for the day school and the night art school, and the best possible arrangement to make their work effective. The outlay required for this purpose will be about \$100,000, a sum which the Trustees did not feel authorized to expend without some assurance that the income would be replaced from some independent source. It is our privilege to state that the children of Mr. Cooper, Mr. Edward Cooper and Mrs. Sarah A. Hewitt, had assured the Trustees that they would make good any deficiency of the ordinary income which might be produced by the expenditure required for the enlargement of the building. But it still remained necessary to provide an additional income in order to defray the expense of the greater number of pupils who would be admitted to the institution in consequence of the enlarged accommodations. The Fayerweather endowment will meet this requirement, and there will be no obstacle, therefore, after the money is received, to the increase of the capacity of the Art School for Women, so that we shall be able to care for about seven hundred pupils instead of three hundred and fifty who heretofore have filled the school to repletion. Moreover, in consequence of the improved ventilation and of the better distribution of space which can now be made, the work of the school will undoubtedly be more effective and the health of the pupils be carefully guarded.

THE FAYERWEATHER TRUSTEES THANKED BY THE TRUSTEES OF COOPER UNION.

The name of Mr. Fayerweather will thus be associated with that of Mr. Cooper forever in the maintenance of the free school of instruction in art for women, and it is quite certain that they will receive the gratitude of the gentler sex for all time to come. Reference to the report of the principal of the school will show how effective the work has been in preparing young women to gain an honorable livelihood, and the very great number of pupils who are profitably employed in the various walks of business in which a knowledge of art is required. It is certain that no more useful application of Mr. Fayerweather's money could have been made, and the trustees of his will, Mr. Justice L. Bulkley, Mr. Henry B. Vaughan and Mr. Thomas G. Ritch, are to be congratulated as well as thanked most heartily by the public, as they are by the Trustees of the Cooper Union, for their recognition of the great work which has been carried on for so many years with inadequate means in enlarging the sphere of usefulness and opening new avenues of employment for many deserving women who otherwise would have lacked the opportunity to prepare themselves for the duties of life.

PROPOSED ENLARGEMENT OF READING ROOM AND LIBRARY.

Reference to the report of the Curator will show that the reading room and the library have been used to their fullest capacity during the past year. The removal of the art school from the gallery surrounding the reading room will enable the Trustees to enlarge the accommodations for visitors, and it is proposed, if the income of the institution will warrant, to throw the gallery open for readers of books, so that the whole of the lower floor may be appropriated to newspapers, journals, and magazines. The range of rooms adjoining the gallery will then be available for the occupation of the Society of the Associates of the Cooper Union, which the Trustees will proceed at once to organize in accordance with the provisions of the trust deed of Mr. Cooper. In this organization they will avail themselves of the Alumni Association as the central body around which the Society of Associates will naturally gather. It is proposed that this suit of rooms, two hundred feet in length, shall be used for the occupation of the Associates, and particularly for the delivery of such papers and lectures as would not attract large audiences from the general public. The Alumni and the Associates will thus be able to pursue special kinds of studies and to give attention to any new scientific or industrial problems

which require solution. When this society has been organized, the plans of Mr. Cooper will have been fully executed, and the Trustees are particularly anxious that this shall be done while the Trustees selected by Mr. Cooper are still living, for it is a remarkable fact that of the original number of Trustees all survive except Mr. Cooper himself. Mr. Wilson G. Hunt, who has been the treasurer of the corporation from the outset, is now in his eighty-sixth year; the Honorable Daniel F. Tiemann; who was Mayor of the City at the time the institution was opened, is now in his eighty-seventh year, while the three younger Trustees, Mr. Parsons, Mr. Cooper and Mr. Hewitt, have all passed their sixtieth year.

INCREASED FACILITIES FOR THE NIGHT CLASSES POSSIBLE.

The report of the director of the night classes shows that the number of people who have completed the course has been larger than in any previous year, and it is believed that the standard of instruction has been maintained at the highest limit of usefulness. When the new floor for the night art classes is prepared, a very much larger number of pupils can be admitted to the drawing and modelling classes, which heretofore have not been able to receive more than one-half of the total number of applicants. The science and mathematical departments have, as a rule, been adequate to meet the public demand, so that with the coming year, the Trustees expect that every deserving young man or young woman who desires to enter the institution will have the opportunity to do so; but in a growing community like New York, there will always be a demand equal to the supply of higher education in science and art. The Cooper Union has set a great example which has been followed by the establishment of high schools in this city, by the Pratt Institute in Brooklyn, and now by the Drexel Institute in Philadelphia, all of which have been modelled upon the plans developed during the thirty-four years of experience gained in the Cooper Institute. It is very gratifying to the Trustees, who were associated with Mr. Cooper for so many years, not merely to witness the good work which has been done within the Institution which he founded, but to find that his example has found imitators in other cities, and that his beneficent work is recognized in every quarter of the civilized globe.

PECUNIARY NEEDS OF THE READING ROOM AND LIBRARY CLEARLY SHOWN.

The department of the institution which now has the most need for immediate extension and development is the free reading room and library. So far as space is concerned, the addition of the gallery will probably double its facilities, but the expenditure which the trustees are able to make upon this branch of our operations is entirely inadequate to the demand for its privileges. The amount expended is about \$10,000 per annum, which suffices to supply the leading magazines and newspapers of this and foreign countries. The reference library has, however, remained almost stationary in the number of books, because by constant use they are so worn as to need frequent replacement. So far as possible the current publications have been supplied, but at least \$10,000 additional per annum is necessary in order to keep up with the latest treatises upon science, art, history, and other departments of learning to which the great mass of our people have no access except through the medium of the Cooper Union. One of the Trustees, Mr. John E. Parsons, has given the sum of \$1,000, which during the last year has enabled us to supply some of the more important publications, but a much larger annual expenditure is required to make the reference library abreast of the times. There is thus presented to some enlightened and generous donor the opportunity to associate his name with that of Mr. Cooper by creating a trust fund similar to the Fayerweather trust, the income of which shall be devoted to the enlargement of the library. This suggestion is made because when the Fayerweather trust was created, it was

asserted, without the slightest foundation in fact, that the money thus appropriated was not wisely devoted to the Cooper Union because it had ample resources and generous supporters within its own circle of influence. The Cooper Union has indeed received from Mr. Cooper's family a most generous support, but their means have been seriously taxed by the large expenditures which have been made upon the building, amounting to over \$400,000, when the present reconstruction is completed, since the death of Mr. Cooper. It was his idea that the institution would receive from other quarters considerable endowments, and he did not suppose originally that he or his estate would be called upon to do more than provide the building in which the educational work of the institution would be carried on. As a matter of fact, Mr. Cooper not only erected the building, but he provided an endowment fund of \$300,000, which, with the income of the rented portions of the building, has been sufficient thus far to maintain the institution upon its present scale of usefulness. But the pressure for greater facilities is so great that the Trustees would be derelict in their duty if they failed to apprise the public of the wants of the institution, and to express the hope that from some quarter the endowment required for the necessary supply of books to the library will come from some one who will consider it a privilege to have his name associated with Mr. Cooper in this work of beneficence.

The Trustees desire to express their profound sense of the fidelity with which the various officers and teachers of the institution have discharged their duties, and they sincerely hope that all who are interested in the education of the masses will visit and examine the institution in its various departments, in order that its work may be fully understood and appreciated.

WILSON G. HUNT,
EDWARD COOPER,
DANIEL F. TIEMANN,
JOHN E. PARSONS,
ABRAM S. HEWITT,

Trustees.

MAY 29, 1891.

The reports of the Directors and Principals of the schools for the season of 1890-'91, will be found in full at the close of the account of the schools;—they record full classes and good results. The report of the Curator of the Library, shows that the facilities of Library and Reading Room have been fully made use of during the year by some 566,942 visitors. Twenty-eight public lectures were given, nearly all of which were illustrated. Of these, three were on the Art of Architecture, and one on Manual Training by Professor Woodward of St. Louis, the veteran pioneer in that form of education.

Dr. F. C. H. Wendel, lectured on "The Temples of Ancient Egypt." Professor William H. Goodyear on "Mediaeval Cathedral Architecture," and Professor George W. Plympton, on the "Development of Temple Architecture." These three lectures were each illustrated.

This history must now close with the last printed annual statement showing the current finances for the year 1890.

This is here followed by a concise statement of the investments, receipts and expenditures, down to 1888, taken from the 29th Annual Report. No such general summary is given in the succeeding Reports.

The list of the Trustees, Officers and Instructors follows and is in itself a striking object lesson showing the varied extent and usefulness embraced in the educational activities of the Cooper Union.

Annual Report of the Receipts and Expenditures of the Cooper Union for the Advancement of Science and Art for the year A. D. 1890.

REVENUE.

Rents from Stores, Offices and Large Hall	\$28,557 26
Miscellaneous Receipts.....	3,469 08
Donations	1,775 00
Interest on Endowment Fund.....	15,716 67
Total Revenue.....	<hr/> \$49,518 01

EXPENDITURES.

For Free Night Classes in Science and Art	\$10,287 38
“ “ Art School for Women	11,244 08
“ “ School of Stenography for Women.....	600 00
“ “ Library	5,629 51
“ “ Reading Room	1,819 71
“ “ Lectures	682 85
“ Care of Building	3,678 89
“ Heat and Ventilation.....	4,140 50
“ Repairs and Improvements	2,134 82
“ Office Expenses	2,319 03
“ Printing and Stationery	729 53
“ Gas.	3,108 94
“ Postage	121 97
“ Sundries	34 55
“ Women's Centennial Union Fund.....	165 00
“ Rewards to Employees.....	181 00
“ Large Hall.....	150 00
Total Expenditures	<hr/> \$47,027 71

GENERAL CASH STATEMENT.

DR.

Balance in Treasury, January 1st, 1890	\$10,516 30
Receipts as per Statement above.....	49,518 01
	<hr/> \$60,034 31

CR.

Expenditures as per Statement above.....	\$47,027 71
Balance in Treasury, January 1st, 1891.....	13,006 60
	<hr/> \$60,034 31

FINANCIAL CONDITION.

CURRENT ASSETS.

Balance in Treasury, January 1st, 1891.....	\$13,006 60
Rents due	1,113 31
	<hr/> \$14,119 91

CURRENT INDEBTEDNESS.

Accounts Audited	\$4,837 74
Grim Legacy	1,726 81
Women's Centennial Union Fund	1,652 11
	<hr/>
	\$8,216 66

SUMMARY FINANCIAL STATEMENT.*

The original cost of the Cooper Union Building when conveyed to the Trustees.....	\$630,000 00
Total receipts from Rents.....	962,787 34
Total receipts from Donations.....	49,765 39
Total receipts from sundry other sources.....	152,238 51
Total aggregate receipts to January 1st, 1888.....	1,164,791 24
Total expenditures for carrying on the various departments, from 1859 to 1888 inclusive (28 years).....	1,206,733 17
Total expenditures on building and education to January 1st, 1888....	1,836,733 17

TRUSTEES AND OFFICERS, 1890-1891.

President.—EDWARD COOPER.

Treasurer.—WILSON G. HUNT.

Secretary.—ABRAM S. HEWITT.

Trustees.—Edward Cooper, Abram S. Hewitt, Wilson G. Hunt, John E. Parsons, Daniel F. Tiemann.

Assistant Secretary.—L. C. L. JORDAN.

Curator of Library.—J. C. ZACHOS.

Advisory Council of the Woman's Art School.—Mrs. Wm. Tilden Blodgett, Mrs. Lloyd S. Bryce, Mrs. J. H. Choate, Mrs. Edward Cooper, Miss Margaret A. Cooper, Mrs. Charles P. Daly, Mrs. Richard Watson Gilder, Mrs. J. O. Green, Mrs. Burton N. Harrison, Mrs. Abram S. Hewitt, Miss Sarah C. Hewitt, Miss Eleanor G. Hewitt, Mrs. Wm. S. Hoyt, Miss Elizabeth Marbury, Mrs. W. H. Osborne, Miss Georgina Schuyler, Mrs. Jonathan Sturges, Mrs. F. B. Thurber, Mrs. Thomas M. Wheeler.

INSTRUCTORS IN THE COOPER UNION FREE SCHOOLS, 1890-1891.

NIGHT SCHOOLS OF SCIENCE AND ART.

Geo. W. Plympton, A. M., C. E., Director of Night Schools, and Professor of Physics, Astronomy and Applied Mechanics.

Robert Spice, B. S., Professor of Chemistry and Electrical Measurements.

William Richardson, Director of Laboratory.

D. S. Martin, Professor of Geology.

J. C. Zachos, Professor of Oratory, English Language and Literature.

Waller Holladay, Professor of Diff. and Integral Calculus and Analytical Geometry.

Ralph S. Rounds, Instructor in Trigonometry, Geometry, Algebra and Mechanics.

J. B. Wallace, J. L. Tupper, C. L. Tyner, Instructors in Geometry and Algebra.

Joseph E. Aue, Instructor in Mechanical and Perspective Drawing.

J. A. Saxton, A. M., Edwin R. Storm, Instructors in Geometrical and Mechanical Drawing.

E. C. Miller, Edward A. Miller, Emil F. Maurer, Instructors in Architectural Drawing.

J. A. McDougall, Instructor in Cast Drawing.

* From 29th Annual Report, May 26th, 1888.

A. M. Turner, Instructor in Form Drawing.
 Max Eglau, H. G. Plumb, Instructors in Drawing from Copy.
 Edward Ehrle, Instructor in Industrial Drawing and Designing.
 Stanislaus Rasario, Instructor in Modelling in Clay.

WOMAN'S ART SCHOOL.

Mrs. Susan N. Carter, Principal.
 Miss Mary A. Vinton, Clerk.
 R. Swain Gifford, N.A., Teacher of Morning Class in Oil Painting.
 J. Alden Weir, N.A., Teacher of Afternoon Class in Oil Painting.
 Willard L. Metcalf, Teacher of Morning Class in Life and Cast Drawing.
 Mrs. William Stone, Teacher of Normal Drawing and Designing.
 Robert Reid, S. A. A., Teacher of Afternoon Class in Life and Cast Drawing.
 W. Howard Hart, Teacher of Morning Class in Cast Drawing.
 Chas. A. Vanderhoof, Teacher of Class in Pen and Ink Illustration.
 Mrs. M. C. B. Ellis, Teacher of Crayon Photographs.
 Miss Lucy A. Poe, Teacher of Photo-Color.
 William H. Goodyear, Lecturer on Art.
 Thomas Eakins, Lecturer on Anatomy.

SCHOOL OF PHONOGRAPHY AND TYPE-WRITING.

Miss M. E. Robbins, Teacher.

SCHOOL OF TELEGRAPHY.

Miss Annie F. Brown, Teacher.

FREE READING ROOM AND LIBRARY.

Prof. J. C. Zachos, Curator.
 Mrs. Curtis, Mrs. Adler, F. A. Curtis, A. J. White, Matthew T. Henry, Custodians.

COOPER UNION NEW YORK CITY. THE FREE NIGHT SCHOOLS OF SCIENCE AND ART.

In the historical account of the comprehensive institution known as "The Cooper Union for the Advancement of Science and Art" given in the pages immediately preceding, the purpose of this admirable institution has been sufficiently set forth, and the gratifying success of this educational experiment recorded. The character and motives of the remarkable man who planned and executed this great undertaking, are shown both in the autobiographical statements made by him from time to time, and by a perusal of his plans as formally set forth by himself in the "Deed of Trust," and accompanying "Letter to the Trustees," as well as by his occasional addresses.

In the general account of his comprehensive plans and in the description of the Institute, the several Departments among which its activities are distributed, have been described with more or less fullness. This makes it more difficult, but happily less essential, to give, in detail, the history and peculiarities of each in turn. All that

relates to the general purpose and scope of the undertaking as illustrated in each case, and to the philosophy underlying the philanthropic effort, can be omitted; as having been already sufficiently considered in the general account. To recapitulate; the Institution, of which these "Free Night Schools of Science and Art" form an important feature, is a free gift to his fellow countrymen made by the late Peter Cooper, a native-born citizen of New York City who, trained to self help and hard work early in life, and having amassed a large fortune, by the exercise of the old fashioned virtues of industry, integrity, economy, accompanied by unusual energy and enterprise; began, in 1854, to build the great building at the intersection of Third and Fourth avenues, which, known as the "Cooper Union," has for the past quarter of a century been a prominent landmark in New York City. That when completed in 1859 he deeded this property, which had then cost six hundred and thirty thousand dollars, to a Board of Trustees; for the purpose of providing, in various ways, opportunities for the free instruction of Mechanics, and others, specifying that the property, much of which was capable of providing an income, "shall be forever devoted to the instruction and improvement of the inhabitants of the United States in practical Science and Art."

Although he was nearly seventy years of age when this great property was thus deeded to public use, Mr. Cooper was spared for almost a quarter of a century longer, to personally direct his bounty, and, from time to time, he added by generous gifts to the resources of the Institute; as, since his decease, his children have done. Mr. Edward Cooper, his son, Ex-Mayor of New York, and Mr. Abram S. Hewitt, his son in law, at present (1888), Mayor of the City—who were, from the first, associated with Mr. Cooper, on the Board of Trustees, continue to take active interest in the work of the Institute; while, as already related, the enormous expenditure, unexpectedly entailed by the necessity of strengthening and rebuilding the foundations of the building, was met by the family of Mr. Cooper.

The Cooper Union Free Night Schools of Science and Art, provide for the youthful mechanics, and others, desirous of learning and unable to avail themselves of other opportunities, similar facilities as are given in other large cities by Mechanics Institutes and like associations. Yet, while resembling in some of its features The Franklin and Maryland Institutes in the sister cities of Philadelphia and Baltimore, and the Ohio Mechanics Institute in Cincinnati, these schools of Cooper Union have an individual character of their own. The Institute has many other features which give it, as a whole, a decidedly distinctive character as compared with any other educational institution; and it is quite possible that the Night Schools themselves may have been somewhat modified and influenced by these other departments.

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One questions whether, had it not been for his kindness in giving a home to the Woman's School of Design,—founded by women some years before his building was erected,—and so having had an opportunity of seeing for himself, the workings and results of that admirable undertaking, Mr. Cooper, would have been so awake to the desirableness of affording ample opportunities to young women for being trained in a knowledge of Art, and in the practical Artistic Industries, as was shown in the formal organization of his Institution. Whether, but for this experience, Drawing and its technical applications to industries, would have received the attention and development in these free Night Schools, which has, in later years, caused so marked an increase in the number of pupils of the School of Art, as compared with the growth of the School of Science.

In the opportunity now given to review the history of the development of the Night Schools by means of the series of official reports of the institution already continuing for more than twenty-five years; a period comprising the exciting times of the War of the Rebellion (1861-'65), and the shorter but hardly less exciting season of the Labor Strikes which, some years later, resulted from Industrial depression; it is possible to trace the modifications resulting from experience, and, in this way, the history of the Cooper Union Night Schools may afford valuable lessons and suggestions to educators engaged in similar efforts.

As already recorded, the opening of the free night classes in 1859-'60 was marked by such an eagerness to enter that nearly "2000 pupils were admitted."

From the report of the Trustees, quoted in the preceding account, it appears that the instruction in mathematics and the natural sciences was mostly in the form of lectures, and that the public were admitted to these, so far as they could be conveniently given seats. The classes began at 7.30, after which hour no one was admitted to the room, and continued for two hours. The pupils were subject to examinations on the topics, and were expected to study the text books.—The list of the Instructors of the first year has already been given in the quotations from the First Annual Report in the preceding general history. The following classes were organized: *The class in Mathematics* numbered 164, and was under the care of Professor B. S. Hedrick and four assistants. Instruction was given in Algebra, Geometry and Trigonometry, with applications to practical science.

The class in Mechanical Philosophy, numbered 105 and was taught by Professor Levi Reuben and Dr. P. H. Vanderweyde.

The Chemical class was attended by 280 pupils. The distinguished scientist Dr. John C. Draper, directed, assisted by Dr. P. H. Vanderweyde. The principles of Light, Heat, Electricity and Chemistry, were set forth with especial reference to their application to the

arts. The brilliant lecturer doubtless drew large audiences from the general public as well as a large number of pupils.

The Class in Architectural Drawing numbered 111 pupils. Mr. John F. Miller, was in charge assisted by two others, one of whom, Mr. Clarence Cook, has since been widely known as an art critic.

"The instruction is given not for those but with especial reference to the principles of mechanical drawing; mere copying is prohibited, but mechanical models are employed as the means of instruction. For this purpose a complete set of the Darmstadt models have been ordered from Europe, and a considerable portion of them have been received."

The Class in Mechanical Drawing numbered 104 pupils. Professor Richard S. Smith, a graduate of West Point, was in charge with two assistants.

The Class in Free hand Drawing numbered 102. Professor Smith, also, had charge of this class with one assistant.

The Trustees take occasion to express their high appreciation of the value to the young Mechanics of all these Drawing Classes.

The Class in Vocal Music meets every Saturday Evening under charge of Dr. Guilmette, and is attended by 380 pupils; 225 men and 155 women. This class was reluctantly agreed to by the Trustees, but its success and practical value has in their judgment fully demonstrated its necessity and value.

The method of recording the number of pupils is somewhat confusing and seems at one time to include the whole number of different individual pupils, and at another, to be an aggregate of the number in each class;—now as one pupil may readily attend two or more classes, there is ample room for discrepancy; as, for instance, the above enumeration gives a total of 860 in the classes not counting those in the music class, counting those there is a total of 1,246. While the statement made is that about 2,000 pupils were admitted to the various classes. There is another fruitful cause of confusion in the fact that many pupils who enter do not remain till the close; and fewer still, take the final examination on which the certificates are granted. This led later to the giving in the Reports, a table showing the number entering, the number remaining at the close of the year, and the number receiving certificates; but, as these tables do not state whether the "totals" represent persons, or only the aggregate of membership in the several classes, there is still confusion; whether the grand total of about 3,000 in the 29th Report for example, represents 3,000 different individuals, or 1,000 individuals who each were admitted to three classes, is no where shown. The large numbers given, and the fact that, in many cases, a pupil would be likely to take more than a single study, leads to this uncertainty. In one or two of the Annual Reports, the discrimination is made; but is not in most of them.

Serious practical difficulties in carrying on the night schools were met in the outset, arising from irregularity of attendance, the lack

of a logical continuous course of study which must be finished if once begun, and the fact that the students were not grouped in graded classes but were taught indiscriminately.

The same condition which confronted Walter Smith, when he was first called to the direction of the Massachusetts Night Drawing Schools; and which Professor Fuchs, found to exist in some degree when he took charge of the Evening Classes of the Maryland Institute. It is, however, due to his immediate predecessor in the Maryland Institute, Professor Hugh Newell, to state that he had already begun the changes needed to remedy these difficulties.

The remedy was easily to be seen but in all these cases the practical application of it was difficult and it was essential that the approaches to the desired conditions should be made gradually and with great discretion, or the very pupils most in need of the opportunities offered by these classes would be driven away.

Although the Teachers and the Trustees, were fully aware of the evils to be remedied; these were so persistent as to be commented on at some length by the Trustees in their Tenth Annual Report.

Many of the first applicants on the opening of the schools had doubtless been led by curiosity, or by the not uncommon desire to get something for nothing, which this offer of free tuition seemed to imply; but, when they found that attendance meant personal effort, and that, however valuable were the proffered gifts of the Cooper Union classes, the recipient of them was, of necessity, forced to pay a large price in the form of personal self sacrifice and exertion, in order to comply with the essential condition of regular attendance and persistent mental effort, they were very soon disheartened and fell away.

The studies, too, implied a previous knowledge which was largely wanting among those who applied for admission to the classes, and the Trustees in subsequent Reports, complain that the public Night Schools do not give their pupils the elementary training in arithmetic, for instance, which is needed to enable them to take advantage of the opportunities of the Cooper Union Schools, which were in no wise intended to be elementary Night Schools; but were planned to offer to the graduates of the night schools, supplementary training in advanced mathematical studies, and in the elements of science. Indeed, a high class technical or "Polytechnic" school was comprised in the ultimate design of Mr. Cooper; this, however, had to be long deferred, in view of the stubborn fact that those for whom his benefaction was primarily designed, could not reach, and could not be reached by such a high grade institution. Nor, after the other departments were developed, was there means remaining for such a school.

However, it was realized that something more effective than the classes of the first year could be organized, and the Trustees at once

proceeded, as did Professors Smith and Fuchs in later years, to effect such an improvement; by classification of the students, and by insisting on regular course of study.

In the Second Annual Report,* is given a brief history of the free night classes opened in 1859, as follows:

"As stated in the last Annual Report, about 2,000 pupils were admitted into these classes. As was to have been expected, many of these were not prepared for the grade of study established in order to make the Institution really useful and respectable. Others again found the severe course of study prescribed distasteful, and when the zeal of novelty was worn off, retired from the classes. Others were forced to leave the Institution by the changes of residence and business incident to a great city. The Trustees are happy to state, however, that over 1,000 pupils remained in the Institution at the close of the term in June last, when the examinations took place, and the certificates were awarded. The examinations were voluntary, and hence the number who actually received certificates was 363, whose names are appended to this Report. It was deemed better not to compel examinations, as the fear of a public trial would deter many, especially those advanced in life, from joining the classes. The Trustees and instructors are of opinion, however, that a much larger number in all the departments would have passed the examinations with credit to themselves and the Institution if they could have brought themselves to submit to them.

The examiners were all gentlemen of distinction in the several departments, connected with other institutions in this city, and their reports are given at length as affording the best evidence of the nature of the instruction and the progress of the pupils."

* * * * *

• After giving the reports of the several examining Committees the Trustees announce their new programme as follows:

"The experience gained by the Trustees during the first session satisfied them that, while it was not judicious to restrict the pupils in the choice of the branches of knowledge which they might desire to pursue, the Institution could not accomplish its grand design of furnishing to the working classes a thorough education in practical science, unless the course of the Institution were definitely prescribed for such as might have the time, the will, and the energy to undertake and complete a thorough system of study.

On the 1st of October, 1860, the free night classes were resumed on the basis of the following course of study, with the provision that pupils might enter either for the entire course, or for any particular branch. Those who complete the entire course, passing a satisfactory examination in each branch, will receive, at the close of the curriculum, the diploma of "Mechanical Engineer;" while those who pursue only special branches, will receive merely certificates of proficiency in such branches, on passing the usual examination. The classes remain, as before, open to all who may choose to attend, whether they design to be examined or not.

FULL COURSE OF STUDY.

The course of the Union will comprise a period of three years, viz:—First Year. *Mathematics*: Algebra, Geometry (including the geometry of the Conic Sections), and Trigonometry. Second Year. Chemistry and Physics; Mathematics com-

*The Second Annual Report of the Trustees of the Cooper Union for the advancement of Science and Art January 1, 1861. New York: J. A. H. Hasbrouck & Company, Printers and Stationers. Digitized by Google. P. 55.

pleted; Descriptive Geometry, and Mechanical, or Architectural, or Free-hand Drawing commenced. Third Year. Analytical Mechanics, and Mechanical Philosophy; Descriptive Geometry completed; Mechanical or Architectural, or Free-hand Drawing.

The number of tickets issued for these classes is 1110." * * *.

The classes average about the same as the first year; the Trustees sum up the history of the year as follows:

"The amount expended during the year for instruction in the night classes, independently of apparatus, furniture, and lighting, was \$5571.95, and the Trustees feel that they have every reason to congratulate the community upon the entire success of the attempt to afford free scientific instruction, at night, to those who by their daily occupations are deprived of the admirable advantages offered in this city for similar instruction in our public schools and colleges. The attention and patience of the pupils are worthy of all praise, and although they undoubtedly require more careful drilling than seems to be necessary for those who devote themselves exclusively to study, the results appear to be more permanent, and the acquisition of knowledge more thorough.

In connection with the night classes, a Debating Society has been formed by the pupils, which meets on Saturday evenings, and consists of about seventy-five members, who avail themselves with great zeal of this mode of self-improvement."* * *

The following extracts are from the Seventh Annual Report of the Trustees,—for the year May 31st, 1866,—the financial reports were made from January to January, but in this part of the report the school year is very sensibly taken, as that is the subject reported on. The extracts from this report show that the plan of a consecutive logical course of instruction has so commended itself after trial, that the full course has been extended from three years, as fixed in the second year of the Institute, to one of five years, where it has since continued. The interests of those pupils unable to take the full course have not, however, been overlooked; but provision has been made for those able and willing to take the full course. These facts account for the very few, in proportion to the whole number of pupils, who remain through the five years essential for graduation. The difficulty of want of preparation for the Drawing Classes, was also impressed on the Trustees, and the pupils in these classes were accordingly classified.

It will be seen that the course in Mathematics is very comprehensive. It also appears that as long ago as 1866, the Trustees of Cooper Union appreciated the importance of Cooking Schools, and that one was established under their sanction.*

THE FREE NIGHT SCHOOL OF SCIENCE AND ART.

* * * "The free Night School of Science and Art is the first and most prominent of these departments. In its establishment two courses were open to the Trustees—either to make a plan of popular instruction given in the form of familiar lectures, or to institute a regular course of systematic education, having especial reference to the branches of knowledge which ought to be understood by

* "The Seventh Annual Report of the Trustees of the Cooper Union for the advancement of Science and Art. July 1st, 1866. New York: John F. Trow & Co., Printers, 50 Greene Street. 1866. Pp. 55."

the working classes, in order to be most useful to themselves and the community. At the outset an attempt was made to combine both plans, but the experience of the first year satisfied the Trustees that results of lasting value could only be attained by a thorough system of study, recitation and drill, beginning at the foundations of science and art, in the elementary principles of mathematics, and rising thence by slow and practical gradations to the applications of these principles to the higher walks of science and art.

Each succeeding year has contributed to the experience of the Trustees, until at length a scheme of study has been perfected, requiring five years for its completion, which, faithfully pursued, leaves but little to be desired for the education of a working man in the branches of knowledge required for the highest industrial development.

THE DIVISIONS OF THE SCHOOL.

The school is divided into two grand divisions, the Scientific and the Art departments. In the former are taught Algebra, plane and solid Geometry, descriptive Geometry, Trigonometry, Analytical Geometry, the Differential and Integral Calculus, Theoretical and Practical Mechanics, Natural Philosophy, Elementary Chemistry, and Chemistry applied to the arts. In this department are employed eleven instructors.

In the Art department pupils are instructed in Architectural drawing, mechanical drawing, free hand drawing, and in drawing from cast and life. In this department eight instructors are employed, attending six nights per week.

The Free Night School is under the charge of Prof. Joseph G. Fox, as Principal, to whose fidelity and ability the Trustees bear willing testimony, and the improved condition of the school under his management, especially in the methods and order of instruction, is very satisfactory and encouraging. It has now been brought to a condition in which the Trustees can safely undertake the difficult and hitherto impossible task of grading the pupils on their entrance. The rule hitherto has been to admit all applicants of the age of 16 years or over, who bring a certificate of good moral character. As a matter of course, there are many excellent young men thirsting for knowledge, who have never received the preliminary rudimentary instruction necessary to begin the study of Algebra. Such young men belong in the public night schools, and after receiving the necessary training in the fundamental requirements of reading, writing and arithmetic, may properly enter the Cooper Union. Again, among those who have the necessary preliminary knowledge, there are many grades of intelligence and proficiency. In order that the more advanced may not be retarded by slow and backward pupils, selection and discrimination will henceforth be made, and while all pupils who have the qualifications for admission will be received as heretofore, the classes will be arranged with reference to the special qualifications of the pupils. A still more serious difficulty remains to be overcome: a large number of pupils have been admitted each year into the classes in Architectural and mechanical drawing who have not received the preliminary instruction in mathematics necessary for the intelligent study of these branches. This indulgence has been granted because many young men working in the shops of the city have alleged that they cannot find time to acquire the mathematical knowledge, but that the mere use of the instruments, and the ability to put simple ideas upon paper, is of great value to them. This is true, but the experience of the School has demonstrated that these pupils can never expect to become good draughtsmen or accomplished mechanics.

THE NECESSITY OF GRADING THE PUPILS.

The Trustees will in future separate this class of applicants from those who are promising a systematic course, in order that the aims of the one class may not be confounded with the higher aspirations of the other class, and that better results may be achieved than have hitherto been possible.

The number of pupils who entered the night classes at the beginning of the term was 1,571. The number who remained until the close of the term was 958, of whom 646 received certificates after being examined, a list of whom is annexed to this Report.

Two classes of certificates are awarded, the *first* being for regular attendance and superior qualifications, while the *second* is awarded for regular attendance and diligent attention to study. No pupil who does not pass a satisfactory examination receives a certificate. The examinations are intended to be thorough, and are not conducted for display.

* * * * *

"GRADUATION.

To those pupils who pursue their studies in the Cooper Union for five years the Trustees grant a diploma, specifying the branches of learning studied, and the general character and standing of the candidate. In accordance with this rule diplomas have been conferred the present year upon five pupils, viz. Frank Curtis, Gram Curtis, David Ferguson, Heyward Myers, and Miss Rosalinda H. Palmer.

But to such pupils as shall complete the full course of study prescribed by the Trustees, and shall at each examination have received a first class certificate, the Cooper Union medal is given as the highest honor of the Institution. Eight young men have heretofore received this distinction, and the present year one pupil only comes within the rules established for the bestowal of this honorable reward, and it so happens that this pupil is the first female graduate of the Institution, Miss Rosalinda H. Palmer.

CONDITIONS FOR GIVING THE MEDAL.

In order that no deserving pupil of the Institution may be excluded from achieving this medal the Trustees have adopted the following rules for its future bestowal.

1. The Cooper Union medal will be awarded to pupils who have completed and been examined upon all the branches included in the full course of the Institution, and have received a first class certificate in each branch, but no person shall be entitled to it who shall not have been a member of the Institution for at least three years.

2. Pupils who have attended the requisite time, but in consequence of having omitted any branch of study, or of having received a second class certificate therein, may not be entitled to the medal, may at any subsequent time repair the deficiency, and on passing a satisfactory examination, shall be entitled to a medal at the next succeeding commencement.

3. Female pupils will not be required to learn mechanical drawing, but in lieu thereof must acquire either a knowledge of music, or such proficiency in Belles Lettres as shall be regarded as an equivalent.

4. Pupils may be relieved by the Trustees for satisfactory reasons, from pursuing any special branch in the full course, provided an equivalent is offered in some other branch of learning.

5. Pupils receiving the medal, or graduating in the full course, shall be members of the Society of Associates, and will be relieved from the payment of any initiation fee. They will be required to pay the annual dues only when availing themselves of the privileges of the Society.

The expense of maintaining the Free Night School for instruction, as appears above by the Treasurer's report for 1865, was \$4,155.63, and the other expenses for lighting, cleaning, heating, attendance, etc., properly chargeable to this department will make its total cost about \$7,500. Assuming the average number of pupils at 1000, the cost per head for the term of 6 months, has been \$7.50."

LECTURES ON COOKING.

"The Trust Deed provides that instruction shall be given in social and political science. Heretofore it has been customary to give a free course of lectures annually, either on the science of government or upon Political Economy. The Trustees decided this year to extend the area of this department, and being persuaded that the health, comfort and happiness of the community are largely dependent upon the preparation of its food and drink, made an arrangement with Prof. Blot for a series of lectures on the art of cooking. Although the experiment was undertaken with some misgivings, it proved to be an entire success. Very large audiences attended, increasing in numbers at each succeeding lecture, and very general satisfaction was expressed in reference to the propriety and value of the course. The Trustees will therefore endeavor during the coming year to arrange with Prof. Blot for a more extensive and detailed course of instruction on this interesting problem of our domestic economy."

The commencement exercises of this year, (1866) were of special interest from the fact that for the first time, the Grand Medal was, as just recorded, awarded to a woman. In the remarks made by the venerable founder, who presented the Diplomas and the Medal, he specially addressed Miss Roselinda H. Palmer, the recipient of the medal, in most complimentary terms; when the audience insisted that he should continue, he rose and added a few general remarks which may be regarded as epitomizing the character and philanthropic purposes of the man. He said:

"I hold it to be the duty of the aged to be always ready to give to the young the benefit of such knowledge and experience as may have fallen to their lot.

"My own experience has taught me that the world's greatest want is the want of knowledge of all the causes that are operating both within and around us.

"The world of mankind, both young and old, requires a Christianity that will be to them a true science and philosophy of life; a harmonizing principle of human improvement, that will destroy the hatreds, the pride, and the selfishness that render life a perfect struggle for a mere subsistence with a large portion of the human family.

"Mankind requires to 'know the truth' in order 'to be made free' by it from the dangers of ignorance, and those errors that have cursed the world with wars, poverty, wretchedness and ruin in all the ages that have passed.

"Mankind requires a science that will render the truths of Revelation as reasonable and beneficial as the growth and product of vegetation.

"We require a science that will be to us a revelation that will show to us the infinite of all good in all the structures, laws, orders and uses of the material and spiritual universe."

In the Tenth Annual Report (July 1st 1869), the Trustees very naturally reviewed the history of the Institute and the circumstances attending its origin. They thus define its informing idea.

* * * "The fundamental idea at the basis of the organization of the Cooper Union is that the working classes—that is, all who are engaged in industrial pursuits—need knowledge in order to be good workmen, and to discharge properly the duties which are imposed upon them by the needs of modern civilization."

They recite the awakening of mankind in the latter years of the 18th Century, at the time when Mr. Cooper, had his birth; and pic-

ture the condition of educational opportunities in the first decades of the present century, as follows:

* * * "In this age of steam and electricity, of newspapers and lectures, of schools and free discussion, it is not easy to recall the difficulties under which knowledge was acquired in this city at the close of the last century, when the progress of discovery was so wonderful and so rapid. The rich, indeed, could send their sons abroad, or at our own colleges acquire the sciences of the day; but for the poor young man there was absolutely no fountain at which he could quench his thirst for knowledge. There were no free schools, and no system of popular education. Night schools, the most popular feature in our present scheme of public instruction, had not even been thought of. There were but few newspapers, and those confined themselves to politics and local news.

This state of educational destitution made a profound impression upon the mind of Mr. Cooper because he himself wanted the knowledge he could not acquire, and hence he determined, while yet a youth, to spend his life in making provision for the education of the young mechanics of New York in such branches of knowledge as were necessary to render them intelligent workmen and good citizens."

They recite Mr. Cooper's efforts in promoting the establishment of free public schools; but go on to show that these schools could not, in the very nature of things, give the special training which would fit the skilled mechanic to meet the exigencies of the new and rapidly changing conditions. They show the necessity of a knowledge of Chemistry, that is, of the composition of materials;—of Physics, that is, of the forces of nature inherent in matter, and of Political Economy and social Science, that is "the laws which govern production, exchange, consumption and prices," a knowledge on which the harmonious workings of society depend; ignorance of which leads to needless conflicts between capital and labor; while the chief injury resulting from such contests "falls on the working and industrial classes." They also show that any adequate training in these sciences cannot be given in the common schools and proceed to give details of the Cooper Union night Schools.

They say:

"Neither Chemistry nor Natural Philosophy nor Political and social Science can largely, if at all, enter into the common school system, because they require maturity of judgment on the part of the pupils not to be expected in the youth who attend them, and appliances in the way of apparatus, models, laboratories and museums, which could not be provided for each school. All this instruction must necessarily be given in a special institution, and so far as the working classes are concerned, it must be given at night, because their daylight is consumed by the business in which they are engaged. It was such an institution that Mr. Cooper decided to found, and in accordance with the general spirit of our political institutions he decided to render it absolutely free to all applicants.

As Mathematics is the language as well as the key to all scientific knowledge, it was necessary to base the system of instruction upon a mathematical foundation, beginning with algebra and terminating with the calculus, and as the graphic arts are essential for the description of machinery and all useful and ornamental objects, it was necessary to supplement the School of Science by a School of Art, in which Free Hand, Architectural and Mechanical Drawing might be learned.

This system, devised to meet all the requirements of a workman for technical instruction, was inaugurated ten years ago, and has been pursued with such success that at least ten thousand (10,000) pupils have been members of these free night classes, some pursuing the entire course, but more engaged in special branches for which they felt the pressing need in their daily business. Besides the regular pupils, large numbers have attended the scientific lectures as listeners, and in this way the great facilities offered by the Institute for public improvement have been utilized.

But the number who can complete the full course of study, requiring five years' of diligent and unremitted labor, after the work of the day has been done, is necessarily small. To-night adds five to the number, making twenty-five in all, who have graduated and received the "Cooper Medal" during the last five years. But the other pupils who have not been able to command the time required for the full course are to be found by hundreds in the walks of industry in this city, giving full and satisfactory evidence of the value of scientific knowledge, not merely in the production of wealth but in the increase of public virtue.

NEED OF BETTER TRAINING IN PUBLIC NIGHT SCHOOLS IN ELEMENTARY MATHEMATICS.

The Trustees have no wish to disguise the fact, however, that far better and larger results would have been produced if the pupils who have been admitted to the institution had been better trained in the ordinary rudiments of a common school education, viz: reading, writing and arithmetic, a good knowledge of which is essential for any higher progress. By far the larger number of applicants have been ignorant of arithmetic beyond its simplest elements, showing that the existing night schools maintained by the public authorities, valuable as they unquestionably are for the primary education of the foreign element in our midst, are not so organized and conducted as to give a thorough knowledge of arithmetic, without which it is vain to attempt a mathematical course or to make any scientific progress. The Trustees have therefore considered the propriety of establishing a training or preparatory school for the young men, over sixteen years of age, who must necessarily be refused admission to our classes in consequence of their ignorance of arithmetic. Such a school is required, but it is surely the duty of the Board of Education to establish it, and the Trustees have decided to make a formal representation of the facts to the new Board of Education, in the hope that such a school for adults will be opened in October next for the reception of the pupils who must be refused admission to our classes in consequence of want of preparation. The necessity for such a school is made apparent by the fact that during the last ten years not more than one third of the pupils admitted to the mathematical department have remained until the close of the term, and that the progress of those who were qualified has been seriously interfered with by the sifting out of those who could not go on.

The Trustees are the more earnest in calling attention to this lack of elementary preparation, because it has been found to be the most serious obstacle to the scientific and technical education of a very large proportion of the young men of New York engaged in mechanical pursuits.

A brief statement of the results of the free night classes of the year just closed will confirm these observations:

The total number admitted in Mathematics is.....	482
The total number remaining at the end of the term is.....	109
The total number admitted in Natural Philosophy.....	276
The total number remaining at the end of the term	58
The total number admitted in Elementary Chemistry	97
The total number remaining at the end of the term	22
The total number admitted in Applied Chemistry	35

The total number remaining at the end of the term	21
The total number admitted in Free Hand Drawing	582
The total number remaining at the end of the term	332
The total number admitted in Architectural Drawing	126
The total number remaining at the end of the term	53
The total number admitted in Mechanical Drawing	160
The total number remaining at the end of the term	83

Whence it appears that in the night schools of Science and Art 1,757 pupils in all were admitted during the term which has just closed, of which only 673 remained at the close. Of course some of this falling off is due to the migratory nature of the working classes, but it will be observed that the loss is greatest in those branches which require good mathematical preparation and the experience of the teachers in their intercourse with the pupils all goes to show that the chief obstacle to progress and a far larger measure of success in imparting a technical education is the total want of preparation in the ordinary rules of arithmetic.

In the conduct of the night classes teachers have been employed during the entire term, at a cost for instruction, exclusive of the general expenses of light, heat, cleaning, etc., of \$6,138.70."

The opening during the year of a "Free School of Telegraphy for Women" is recited, 16 were admitted as pupils of whom 10 remained, 5 of whom qualified themselves as expert operators and others had already secured paying places. The history of the term show that the practical results aimed at by Mr. Cooper, have been constantly kept in view.

The Fourteenth Annual Report (May 31st, 1873,) is signed by Dr. J. C. Zachos, the Curator.

After stating the various reasons which render the common schools inadequate to give the requisite training, largely owing, in his opinion, to the fact that the pupils leave school at such an early age; and noting the decadence of apprenticeship, as well as the advent of the era of machinery which has displaced so many trades and handicrafts; from which combined causes it results that the youth grow up ignorant of any knowledge of skilled labor, he proceeds to enumerate other disturbing conditions, to obviate the evils of which was one great purpose and hope entertained by Mr. Cooper, in founding "the Union." It will be observed that this was written during the time of the industrial depression and consequent labor "strikes" which prevailed in several of the States.

The suggestion that smaller institutions modelled after the Cooper Union could be readily founded in other towns and cities of moderate size is worthy of consideration. The free Evening Drawing Schools established by law in certain towns and cities in Massachusetts was an effort to meet these needs. The Curator says:

* * * "It is easy to show now by statistics that, with the vast yearly accession of immigrants to this country, composed largely of the ignorant peasantry of Europe, and the great proportion of our native population, who lose even the slight elementary training of our common school, ignorance, poverty and misery are on the increase in the crowded populations of our large cities, in comparison to the increase of intelligence, competency and happiness. Strikes among the industrial

classes, and the corrupt means used by corporate capitalists, to maintain vast monopolies, are among the serious evils of the times. They manifestly interrupt the normal currents of trade and commerce; they are a real warfare between classes that have but one common basis of happiness and prosperity. Great and rapid as is the increase of our wealth as a nation the distribution of this wealth does by no means keep pace with its increase.

The curse of Europe, where moneyed feudalism has taken the place of military and landed feudalism, is fast descending on us as a people. These are facts and tendencies indisputable; and the far seeing patriots of our country, are either "despairing of the Republic," or diligently seeking preventive measures and radical cures for this morbid state of things. Among these last may be reckoned the founder of the Cooper Union. He has designed that the aim and the work of this institution, shall be to promote that union of art and science, of labor and capital, of distinctive classes and the whole people, of private rights and universal, of municipal government and the general, which is symbolized by its name, and essential to the permanent existence of a Democratic Republic. This union can only be maintained and promoted by education, and chiefly by that kind of education of which this institution is both the instrument and example; that is, the education of the industrial classes.

In the midst of Republican institutions and a high and advancing order of industry that new discoveries and inventions are inaugurating, what can be a more important question than how to prepare the mass of the people for such a political, social and industrial life as solicits and awaits them. How shall this mass of youth be so trained, as not only to secure permanance in what is good, advance to what is better, but save them from the incidental evils and ruinous consequences of ignorance of their place and duty in this order of things? Here is distinctively an American question, before which, most political and social questions sink into insignificance. Can the youth belonging to our industrial classes be instructed and trained without interrupting their work, on which depends their self-support? Can those who are engaged in work be lifted to higher grades of the mechanic arts, according to their natural ability, and keeping pace with all advancements in discovery and invention?

This institution has meant to demonstrate how, in every municipality of five thousand citizens, there might be an Industrial School of Art combined with scientific instruction, in which cheerful conditions and attractive methods, could draw together daily and nightly, those who are immediately designing, or pursuing some industrial art; and there give them suitable instruction. Thus drawing the youth away from idleness, dissipation and vice, such a school would save its expenses every year in saving jail fees and court charges, and throw into the community a generation of cheerful, intelligent and well-trained youths, who would not only be the "bone and sinew" of our country, but largely its brain, its moral force, and its chief prosperity and happiness."

Speaking of the Night Schools he says:

"These schools are mostly attended by young men, though women are admitted, and attend them in certain small proportion. The design of the instruction here, as in all other departments of this institution, is practical—such as can be applied to some useful art and paying employment, in contradistinction to general culture and discipline of powers. But it was found that very few of the young men were prepared with the antecedent knowledge necessary to any of the applied sciences, and practical arts. Some are admitted to a certain rudimental instruction in the lower grades of these arts which they find very useful to them in their workshops—such as drawing and designing without elementary geometry. They have not the time or the will to acquire the preliminary knowledge. But for the better class of more willing students it was designed to begin with some of the more useful and practical parts of the sciences, and to continue in this antecedant course

for the departments of Engineering, Mining, Metallurgy, Analytic and Synthetic Chemistry, Architectural Drawing, and Practical Building. Here the Free Academy and the College ought to supply this preliminary knowledge for the Polytechnic Schools, and such as are designed for the industrial classes. But here comes the impossibility, before alluded to, of detaining those youth in the Public Schools long enough to lay the foundation in general knowledge, for the specific and skilled acquisitions of art. Hence, we must impart this preliminary knowledge, after the youth have left school, and have commenced to work for a living. The mere rudiments of Reading, Writing and Arithmetic, can now be obtained in this city, in Free Night Schools, established under the City Government.

COOPER UNION COURSES OF INSTRUCTION.

The course of instruction at the Cooper Union is divided into two departments. In the first are taught Algebra; Plane, Solid, Descriptive and Analytic Geometry; Plane and Spherical Trigonometry; Theoretical and Practical Mechanics, Natural Philosophy; Elementary, Organic and Analytic Chemistry.

In the Art Department is taught Drawing in all its branches—Architectural, Mechanical, Free-hand Drawing, and Drawing from Cast and Life; Painting; Modeling in Clay. Lectures are given in Perspective. In these two departments there are employed twenty-three instructors for six nights of the week. During the Term 2,721 applicants were admitted to the classes, but as some joined several classes, the number admitted to the school was 2,100. This is an increase on any previous year.

The pupils are given certificates of proficiency in every special department of study in which they have stood a satisfactory examination. Those who pursue their studies in the Cooper Union for five years are entitled to a diploma certifying the branches of learning studied, and the general standing of the pupil.

To such pupils as shall have completed the full course of study and shall at each examination, receive a first-class certificate, the Cooper Union Medal is given as the highest honor of the institution.

During the present year, 567 certificates of proficiency were granted to pupils of the various classes. Both the Graduating Diploma and the Cooper Medal were granted to the following students; Miss Sarah Collins, Patrick Doody, and George Jungerman. The few, comparatively, out of the whole number that attend the Cooper Union, who each year receive the Diploma or the Medal, show conclusively, that this Institution places no low mark for the attainments of those who would receive its highest honors; and be it remembered that these are honors and qualifications which the Trustees claim as the rightful due of any who would take their true position as intelligent citizens of a Republic, and a high place among its industrial classes. The Trustees acknowledge with thanks the wise liberality of Messrs. Mitchell, Vance & Co. in presenting two beautiful bronzes as prizes for the best drawings in the Industrial Art School."

As an evidence that something in addition to the Technical Science and drawing studies is desirable, the following statement in reference to a new department of the school, is quoted.

"AN ENGLISH LITERARY DEPARTMENT

has been more distinctly recognized by the Trustees this year, by the appointment of a Professor of English Literature. To the Oratory and Debating Classes, hitherto organized, have been added classes in Elocution, Rhetoric, and English Literature. It is found by the experience of those who may be qualified to take leading

places in the superintendence of manufactures and workshops, that in conducting correspondence, and assuming their rightful position as master mechanics, ignorance of the proper usages and powers of their own language is a great hindrance; it is a subject of constant mortification, and real obstacle to advancement. It might seem as if some scientific attainments and much reading of books should qualify a man to speak and write his own language correctly; but it is found by experience that without some special instruction in his own language, the best trained and most skillful workman will fail to meet, in this respect, the wants of his position, and the requirements of business among gentlemen. The fact will not be forgotten in future, in the regular course of instruction of the Cooper Union."

The Director of the schools reports as follows of the art classes:

. "IN FREE HAND DRAWING.

In *Rudimental*, where very little show can be made, the progress has been very great; in *Ornamental*, the drawings are the finest ever produced in the School, and it is doubtful if they have been surpassed anywhere; in *Figure*, the results have not been quite so satisfactory; in *Form*, but little has been done, owing to the small size of the Classes, but that little, most excellent; in *Cast*, the exhibition will show the finest results ever attained; in *Life*, the results are much better than last year: in *Mechanical and Architectural Drawing*, the results show more improvement than formerly; in *Perspective*, a little better than usual; in *Modelling in Clay*, the exhibition will be creditable.

During the term 2,721 applicants have been admitted to the schools; but, as some have joined several classes, the number of individuals is only about 2,100. This is considerably larger than ever before. More than 1,000 of these are still on the rolls and presented themselves at the examinations.

The number of Certificates of proficiency awarded on Friday, April 25th was 567. I would also recommend that graduating diplomas and the medals be conferred on Sarah Collins, Patrick Doody, and George Jungerman, for their faithful observance of requisite conditions.

All of which is most respectfully submitted:

FITZ GERALD TISDALL, JR.

Director."

The increasing tendency to the more rapid development of the Art School is very noticeable in thus reviewing the history of these free night schools. It is a part of the general tendency of the times, stimulated by the example set by Massachusetts in 1870, by calling Walter Smith to the Art Directorship of the Public Schools; and intensified by the holding of the Centennial Exhibition in Philadelphia, 1876, with its multitudinous object lessons, showing the infinite applications of Art to industry and the exceeding preciousness of Art as shown in its power both to endow the commonest articles with the gift of beauty, and to enhance the value of the most precious fabrics and materials; outweighing with its qualities the rarest treasures of the mine, the costliest tissues of the loom, untouched by its informing fingers.

In the Eighteenth Annual Report (May 29th, 1877), the Curator sets forth the utility of art instruction as shown in the practical application of it in the courses given in the Institute. He also briefly

enumerates the various gifts made by citizens to promote the art instruction given in the various classes and schools of Cooper Union.

He says:

"The general details of the Scientific and Art Department of the Evening Schools, and also of the School of Design for Women, will be found in the Reports of the Directors of those departments; but it becomes my duty to notice a few things in these schools of general interest to the Trustees and the public at large.

THE CLOSE INTER-RELATION BETWEEN FINE AND INDUSTRIAL ART.

There are two instrumentalities in Art that have to be made objects of special instruction. The imitative, manual and constructive skill which is in a great measure mechanical, and the originating, designing, and imaginative power which works by principles and general rules. The constructive and the designing elements of art are equally necessary in the practical application of art, and both deserve a special attention; but if the instruction is confined to the first, it makes a servile, unprogressive and merely imitative artificer; if, on the other hand, design and invention be the whole study of the pupil, the practical execution of art has to be entrusted into the hands of the artificer. This is done in some of the fine arts, but it cannot be done in the practice of art for a living, as taught in the Cooper Union. It is the purpose of the instruction in the Art departments of the Cooper Union to unite the two instrumentalities in the productions of Art—both designing and careful execution. Invention is specially promoted by the lectures on Art which the pupils receive, the instruction in Perspective Drawing, and especially the lectures and instruction given to the Normal Class, for the preparation of teachers of Drawing in private and public schools. It is the purpose of the Trustees to extend the instruction in the evening School of Art, more into the departments of Invention and Design, as answering a demand most truly American, where the inventive faculties are more active than in any part of the world.

In the Engraving Department, the teacher gives out themes or subjects, for which the pupils are required to make original designs. This is a very important direction to give to study in this department; because original designs are much called for here, and are well remunerated.

It is worthy of note, that the purpose of giving such instruction in practical art and applied science, as will put an independent employment in the hands of every student, is in many instances commenced, while the pupil is still under instruction in the Institution. This is especially the case in the Art School for Women. The amount reported as earned for themselves by pupils in the different departments of the Woman's Art School, this year, is \$10,488. The particulars are given in the several reports and in the summary.

It is proper to remark that all the classes of this institution, with one exception, and all its privileges are absolutely free; and no personal interest or favor is shown in the admission of pupils, except, some special need for purposes of self-support, and precedence in the application. But in consequence of the great pressure for admission to the instruction of the Institution, and the earnest offer of many to pay for their instruction, which they were abundantly able to do, the Trustees have allowed an amateur class to be formed which meets in the afternoon, out of the regular class hours, and of which each pupil pays a small fee, that is simply sufficient to pay the teachers for the extra time of instruction.

GENEROUS GIFTS TO THE SCHOOLS.

The interest felt by thinking men and women in these Art Schools of the Cooper Union, is well proved by several gratifying incidents that have taken place this year, and of which the Trustees desire to make a public acknowledgment.

The Women's Centennial Committee having a surplus left, in their financial arrangements, came to the conclusion to appropriate \$1,500 of this sum to the Woman's Art School in the Cooper Union, as a part of the permanent endowment, the proceeds of which should be given to help such indigent students as could not support all their expenses of living, while in attendance on the Art School.

F. W. Devoe & Co., manufacturers and importers of art materials have generously offered \$50 worth of art materials for the use of the pupils of the Art School, and any particular case of need reported to them by the Principal, will likewise be supplied.

The proprietors of the *Manufacturer's Review* present two prizes for original designs in Calico patterns. The prizes are \$5.00 and \$10.00 in gold.

But one of the most generous and practical contributions to the usefulness of this school, is the offer of Prang & Co., publishers of chromos and also of several books for teaching drawing in the schools, to support a teacher of a Normal Class in the Cooper Union. This was done at an expense of \$1,000 last year and of \$1,500 this year. Besides the regular class organized under this endowment, the same firm support a class designed for the teachers of the public schools, who give their attendance on Saturday at the Cooper Union.

In this connection ought to be mentioned the prize of two beautiful bronzes, given yearly by Mitchell, Vance & Co., to the best student in ornamental drawing. Also, the prize of Wilson G. Hunt, the honored Treasurer of the Board, of \$15 in gold, to each of four of the best students in drawing. For several years past the prize funds founded by A. A. Low, Esq., and by Frederick A. Lane, Esq., amounting each to \$60, in Gold, have been awarded to deserving pupils with the best results.

The prizes create a generous rivalry among the students, stimulate their industry and are most frequently won by those who really need the help given by the money."

In his report for 1878-79, (20th Annual Report, May 29th, 1879), Mr. Tisdall, the director of the night schools says:

"The summary report given elsewhere shows that while the total number admitted has been less than in the terms of 1876-77 and 1877-78 [the numbers being 2873, 2862 and 2820], the number remaining at the close has been greater [1366, 1445 and 1466] and an increase of proficiency is shown by the greater number of certificates earned [609, 623 and 634]. It is fair to say that the requirements for certificates are also higher than they have been.

The scientific departments have this year traversed their usual courses with the addition of a most interesting course of lectures on Geology. While the mathematical classes have shown a fair average of proficiency, the lower ones have been more proficient than for many years. In the art classes, while some have remained stationary, great improvement has taken place in others. Thus, while a few have excelled in Ornamental Drawing, the average work of the pupils is no better than in previous years; in Figure drawing from the flat, and Rudimental drawing, the amount of work done is much greater than usual, and the average proficiency greater also; in drawing from the Cast great progress has been shown, and this is the more agreeable as the pupils are almost entirely new to the subject; in drawing from simple objects the amount of work is about the same, but the quality is much better; in Mechanical, Architectural, Perspective and Industrial Drawing, the progress made and the work done are very gratifying; in Modelling in Clay the results are about the same as usual.

A close examination of the records of the schools for the past year leads me to believe that the period of depression in pursuits requiring scientific knowledge has not yet ceased; while the art classes seem to indicate that the demand for skilled labor is increasing in various branches of artistic manufactures."

The summary of attendance during the session of 1878-'79 shows, a few separate scholars in drawing in the science schools. "Mechanical Drawing, (School of Science,) 21 admitted, 20 remained, 8 received certificates. * * * and in the drawing school as follows:

It will be noticed in all statistics of these schools, that but a small number relatively go through the entire course, so as to receive certificates. The various causes that lead to this result have been fully set forth in the preceding pages.

THE FREE SCHOOL OF ART.

Summary of attendance for session of 1878-'79.

	Admitted during the term.	Remaining at close of term.	Number that received certificates.
Perspective Drawing	88	34	25
Mechanical Drawing	241	126	48
Architectural Drawing	316	100	18
Drawing from Cast	62	50	21
Form Drawing	67	35	26
Industrial Drawing	144	87	41
Free Hand Drawing	512	296	80
Modelling in Clay	109	60	19
Total in School of Art	1439	792	278

The 21st Annual Report, (1880), shows a new Director in charge of the Night Schools, Mr. George W. Plympton.

The following paragraph from his report is of interest as showing the practical utility of even an elementary knowledge of drawing.

"The demand for apprentices who had attained some skill in drawing began early in the winter, and continued to the end of the session. The pupils were, for the most part, so engaged in various industries that no response was obtained in many cases when a call for several apprentices was advertised in the class rooms. From thirty to thirty-five, however, were sent, in answer to applications from decorators, silver workers and architects."

"THE FREE NIGHT SCHOOL OF ART.

The statistics of attendance for the session of 1879-'80 are as follows:

	Admitted during the term.	Remaining at close of term.	Number that received certificates.
Perspective Drawing	85	44	23
Mechanical Drawing	300	143	70
Architectural Drawing	230	111	49
Drawing from Cast	126	60	27
Form Drawing	71	47	17
Industrial Drawing	167	105	46
Free Hand Drawing	569	283	87
Modelling in Clay	108	49	22
Total in School of Art	1656	842	341

The Mechanical Drawing pupils in the School of Science were 21, "admitted" 14, "remaining at close" — 9 "received certificates."

There was a total attendance in School of Science of 1362 admitted, 659 remained through term, 368 received certificates.

In the 22nd Annual Report, (May 28th 1881), the Curator occupies three pages in an earnest plea for "technical education," he says:

* * "Industrial education is the great need of this nation; which the whole intelligent force and wealth of the American people must secure. * * * An imperfect knowledge of a trade, or a poor trade, will keep thousands hovering over the verge of want and crime; the employment not much valued is easily lost. The "tramp" comes from the poor workman, and the criminal from the tramp.

Give, therefore, to the rising generation a good knowledge of remunerative trades, and it will lift itself from poverty into competence and a well ordered condition, which is easily accessible to moral influences, and will need no help from "charitable institutions."

Technical instruction in our common schools could soon rid us of a large and unskilled population, constantly losing their fitful and servile employments, and pushed by their poverty into crowded tenements and gravitating daily into pauperism and crime, from which no "soup kitchen" can save them."

The Director of the Night Schools records "the removal of six classes of the Art School from the third floor to the new rooms on the 6th floor," resulting in great increase of comfort to teachers and pupils.

THE FREE NIGHT SCHOOL OF ART.

The attendance in the Free Night School of Art during the session of 1880-'81 was as follows:

	Admitted during the term.	Remaining at close of term.	Number that received certificates.
Perspective Drawing	90	48	24
Mechanical Drawing	260	120	82
Architectural Drawing	235	116	33
Drawing from Cast	130	46	20
Form Drawing	85	48	14
Industrial Drawing	160	110	40
Free Hand Drawing	545	284	88
Modelling in Clay	117	54	20
Total in School of Art	1,622	826	321

The pupils in the School of Science who took "Mechanical Drawing" were 28 "admitted," 18 "remained" and 12 "received certificates."—1,335 were "admitted" to Science School, 668 "remained," 390 "received certificates."

The Curator records in the 23rd Annual Report, (May 27th 1882), that 3,334 pupils entered the various classes of Cooper Union during the season 1881-'82. "Of these, 936 entered the evening scientific classes. 1227 The Evening Art Classes."

The Director's report shows the continuance of the demand for pupils trained in these schools.

"The demand for pupils of the Institute to engage in branches of industry for which their training here has fitted them, has continued quite steady throughout the season. A request to English school draughtsmen called attention

to the fact that the course of the fourth year scientific class might, with profit, be so far modified as to include a short elective course of topography to be substituted for a portion of the prescribed course in machine drawing. The substitution is easily effected, as their instructor, who is a civil engineer, finds one of these kinds of drawing quite as much in the line of his professional labor as the other.

A letter from the chief engineer of the Manitoba Southwestern Railway, bearing date Dec. 23rd, 1881, contains the following paragraph, which is submitted here as bearing testimony to the kind and degree of proficiency attained in the scientific department:

"I have in my employment one of your former pupils who has given such satisfaction that I have concluded to ask you to recommend and send to me two young men from the Cooper Union School. They should have a fair knowledge of mathematics and drawing. Their salaries would be, for the present sixty dollars a month, and when on Surveys their board will be free."

A letter of similar import was received in September last from a graduate of two years ago, who is now a resident engineer on a railroad of this State.

He records also an interesting course of lectures. "A course of lectures on 'The Development of Architecture' was delivered on the Thursday evenings of February and March, by Prof. E. D. Lindsey, formerly of Princeton College."

THE FREE NIGHT SCHOOL OF ART.

The attendance during the session of 1881-'82, was as follows :

	Admitted during the term.	Remaining at close of term.	Number that received certificates.
Perspective Drawing	62	32	26
Mechanical Drawing	260	151	96
Architectural Drawing	165	102	47
Drawing from Cast	74	44	17
Form Drawing	68	49	19
Industrial Drawing	120	37	15
Free Hand Drawing	380	260	85
Modelling in Clay	98	54	17
Total in School of Art	1,227	729	322
Grand Total in Night Schools ..	2,163	1,294	668

GEO. W. PLYMPTON, A. M., C. E.

Director.

A smaller attendance, corresponding with the lessened general attendance in the School of Science, is recorded on the Mechanical drawing class of the School of Science, namely 10 "admitted," 9 "remained," 8 "received certificates."

The next year showed a return of numbers to the science classes, the curator in the 24th Annual Report, (May 26th, 1883), records the general attendance on all the classes of the Union as follows:

"The number of pupils who have entered the various classes, during the past year, has been 3,917. Of these, 1,169 entered the evening scientific classes; 1,797, the evening art classes; 496 pupils have been admitted to the Woman's Art Schools, and about the same number declined, for want of room. Two hundred have been admitted to the Young Men's Literary Class, two hundred to the class in Elocution, and fifty-five, to the class in Telegraphy.

Of this whole number of pupils, 2,074 remained throughout the year in regular attendance upon their classes, and a large majority of these obtained "certificates of proficiency," and other testimonials of excellent attainment in their several studies."

The Director of the Night Schools reports as follows :

“The attendance in both the science and art departments has been larger than usual, and as but few causes affecting the regularity of attendance have existed, the result has been the award of a large number of certificates.

The earnestness manifested by the pupils in the elementary classes has been exceedingly gratifying to the instructors. A stimulus to this has possibly existed in the large number of applicants who were waiting for vacancies to occur.

The changes in the programme of exercises for the previous session have been few in number. An additional instructor in architectural drawing has increased the efficiency in that department; the results of which are exhibited in the increased attendance and the larger number of drawings prepared for exhibition.

The introduction of drawing from solid objects, in the rudimental class, has yielded good results and an extension of the plan to accommodate a larger proportion of this class is proposed for the next season.

A course in topographical drawing has taken the place of a part of the course in machine drawing to accommodate those students who desire to engage in surveying.

The demand for skilled draughtsmen began with the opening night of the school in October last, and has continued quite steadily through the winter.”

“THE FREE NIGHT SCHOOL OF ART.

The following are the statistics of attendance for the session of 1882-'83.

	Admitted during the term.	Remaining at close of term.	Number that received certificates.
Perspective Drawing.....	65	24	19
Mechanical Drawing.....	347	178	92
Architectural Drawing.....	330	124	54
Drawing from Cast.....	113	48	17
Form Drawing.....	84	38	11
Industrial Drawing.....	192	120	52
Ornamental Free Hand.....	306	159	56
Rudimental Free Hand.....	260	121	44
Modelling in Clay.....	110	61	26
Total in School of Art.....	1,797	903	371
Grand Total in Night Schools.....	2,966	1,608	778

GEO. W. PLYMPTON, A. M., C. E.,

Director.”

The attendance on the Mechanical Drawing class in the School of Science has increased to 20 “admitted,” 14 “remained” and 7 “received certificates.” There was a total attendance on the School of Science of 1169 “admitted,” 705 “remained,” and 407 “received certificates.”—

The following copy of the “Rules and Regulations of the Free Night Schools, (1882-83),”—from which, however, the daily programme of class exercises are omitted,—will give a better idea of schools than these much description.

“RULES AND REGULATIONS.

I. The term commences on the 1st of October, and ends on the 15th of April. The hours of recitation are from 7.20 P. M. till 9.30 P. M.

II. There will be a recess from 8.25 to 8.30 P. M. during which students may enter and leave the school.

III. Applications for admission are received during the month of September, on Tuesday, Wednesday, Thursday and Friday evenings and on Thursday evenings thereafter.

IV. Each applicant for admission must be at least fifteen years of age, and should bring a letter of recommendation from his employer.

V. Ladies are admitted to any of the classes in the School of Science, for which they are fitted, but not to those of the School of Art.

VI. As only a limited number of pupils can be admitted to the classes of the latter, a preference is given to those whose occupations have special reference to the studies taught therein.

VII. Visitors are admitted to the Lectures on Chemistry, Natural Philosophy, Geology and Astronomy without tickets, provided they enter at the appointed time and remain until the lecture is completed.

VIII. Any pupil absent three times without a satisfactory excuse, forfeits his position in the school. Pupils absent for sufficient cause, and who wish to retain their position, should report to the Director, either in person or in writing, before three absences have been recorded.

IX. No pupil can leave the School while his class is in session, except with the written permission of his instructor.

X. For any breach of good behavior, or violation of the regulations of the school, a pupil will be immediately suspended, and reported to the Trustees for dismissal. Cleanliness in person and habits is strictly required.

XI. The following are the studies pursued in the School:

- | | |
|--|----------------------------|
| 1. Algebra. | 13. Applied Mechanics. |
| 2. Geometry. | 14. Architectural Drawing. |
| 3. Trigonometry. | 15. Mechanical Drawing. |
| 4. Descriptive Geometry. | 16. Drawing from Copy. |
| 5. Analytical Geometry. | (a) Figure. |
| 6. Differential and Integral Calculus. | (b) Ornamental. |
| 7. Elementary Mechanics. | (c) Rudimental. |
| 8. Natural Philosophy. | 17. Drawing from Cast. |
| 9. Elementary Chemistry. | 18. Drawing from Form. |
| 10. Chemical Analysis. | 19. Perspective. |
| 11. Astronomy. | 20. Decorative Designing. |
| 12. Geology. | 21. Modelling in Clay. |

XII. Each applicant is permitted to pursue the study of any subject taught in the School for which he is fitted. Applicants for admission to the Class in Algebra are required to pass a satisfactory examination in Arithmetic, and those who desire to enter any of the higher Classes must be able to pass a satisfactory examination in all the preliminary studies. It is desirable that all who are admitted to the School of Science should pursue the *Regular Course*, as hereafter described.

XIII. The regular course of study requires five terms for its completion, and to those who have successfully completed it, the Cooper Medal and Diploma are awarded. The following is

THE REGULAR COURSE OF STUDY.

Class E.—First year : Algebra, Geometry, Natural Philosophy, and Elementary Chemistry.

Class D.—Second year : Algebra, Geometry, Elementary Chemistry, and Astronomy.

Class C.—Third year : Trigonometry, Descriptive Geometry, Analytical Geometry, Mechanics, and Geology.

Class B.—Fourth year : Analytical Geometry, Differential and Integral Calculus, and Mechanical Drawing.

Class A.—Fifth year: Engineering and Analytical Chemistry.

XIV. During the second week in April the examinations of the Pupils of the School of Art are held, and during the third week those of the School of Science. To those pupils *who have passed through the examinations creditably, and have been regular in attendance.* Certificates are awarded, either of the first or second grade, according to their progress and ability.

XV. Those pupils who have not pursued the regular course, but have successfully completed the study of any particular subject, will receive a Certificate therefor.

XVI. During the last week in May the reception of the pupils of the School of Art is given, for which they are required to deliver, during the term, to their instructors, any drawings which the latter may deem worthy of exhibition. The drawings, however, are in all cases the property of the pupils, and will be returned to them at the close of the reception. The Trustees reserve the right to retain at least one drawing from each pupil, if they so desire.

XVII. Only those pupils who have received certificates are advanced at the end of the term.

XVIII. Pupils of the School and those who have received certificates in former years, are entitled to admission to the class in Oratory and Debate. Pupils in the regular course of study are advised to enter this class on account of the great benefit they will receive therefrom. All cards of admission must be endorsed by the Director.

XIX. No expense whatever is incurred by the pupils, except for the purchase of text books and drawing materials.

XX. In order that the pupils may be able to purchase only what they need, and at the lowest price, they are enabled to *obtain all they require at the school*, at the trade prices. Those who are admitted to the School of Science should come prepared to defray all expenses for books the evening their respective classes are organized; also those in the School of Art should be alike prepared to defray all expenses for drawing instruments, boards, paper, etc., the evening of their class organization.

XXI. The following text books are used in the school:

Davies' University Algebra.	Hooker's Chemistry.
Davies' Legendre's Geometry and Trigonometry.	Peck's Analytical Geometry and Calculus.
Dana's Mechanics.	Dana's Geology. Fresenius' Analysis.
Avery's Natural Philosophy.	Kiddle's Astronomy.

XXII. The number of applicants that can be admitted to the School is as follows:

Elem. Mechanics	50	Chemical Analysis.....	20
Astronomy.....	200	Arch. Drawing.....	200
Engineering.....	15	Descrip. Geometry.....	50
Anal Geometry.....	45	Mech. Drawing.....	220
Dif. and Int. Calcu.....	45	Drawing from Copy.....	300
Trigonometry.....	45	Decorative Designing.....	150
Geometry.....	120	Drawing from Cast.....	60
Algebra.....	120	Drawing from Form.....	90
Natural Philosophy.....	250	Perspective.....	80
Geology.....	200	Modelling in Clay.....	100
Elemen. Chemistry.....	200	Oratory & Debate.....	200

* * * "

ART DEPARTMENT.

Each of the Art Classes is in session from 7.30 to 9.30 and with the exception of the Cast, Perspective and Rudimentary Mechanical Drawing Classes, each is divided into three sections.

The sessions of the 1st section are Mondays and Thursdays.

The sessions of the 2nd are Tuesdays and Fridays.

The sessions of the 3rd section are Wednesdays and Saturdays.

The Cast Class is in two sections only, the first meeting Monday, Wednesday and Friday; the second meeting Tuesday, Thursday and Saturday.

The Perspective Class is in two sections, one meeting on Wednesday and the other on Saturday.

The beginners in Mechanical Drawing form one class, meeting on Monday and Saturday."

"INSTRUCTORS 1882-'83.

SCIENTIFIC COURSE.

Geo. W. Plympton, A. M., C. E., Director and Instructor of Physics, Astronomy and Engineering.

Chas. S. Stone, A. M., Chemistry, Geology and Mineralogy.

Geo. W. Coakey, LL. D., Differential and Integral Calculus, and Analytical Geometry.

W. Gould Levison, Chemical Analysis.

Waller Holladay, Trigonometry, Geometry, Algebra and Mechanics.

A. A. Griffin, Geometry and Algebra.

Henry S. Carr, Geometry and Algebra.

W. Le Conte Stevens, Geometry.

Edmund Maurer, Machine Drawing and Descriptive Geometry."

"IN THE ART DEPARTMENT.

J. A. Saxton, A. M., Mechanical Drawing.

Edmund Maurer, Mechanical Drawing.

Edward C. Miller, Architectural Drawing.

Emil Maurer, Architectural Drawing.

Benj. Braman, Perspective Drawing.

Wm. W. Scott, Cast Drawing.

Geo. W. Maynard, Form Drawing.

Max Elgan, Ornamental Drawing.

H. Plumb, Fig. and Rudimental Drawing.

R. Wasserscheid, Decorative Designing.

Nicholas Rossignole, Modelling in Clay."

The following is the report of the Director of the Night School of Science and Art which appears in the Twenty-Fifth Annual Report of the Trustees (May 28, 1884). :

"To the Board of Trustees of The Cooper Union.

GENTLEMEN: The sessions of the Night School for the season of 1883-84 closed with the distribution of certificates on April 18th.

The attendance in both departments has been larger than ever before. For the Art Classes alone tickets of admission were given to one thousand nine hundred and fifty-six (1,956) individuals. Of this number two hundred and thirty (230) either failed to present themselves afterward or else remained too short a period to be fairly counted as members of the school. Two hundred and twenty-one (221) applicants for the classes in Architectural, Mechanical, and Rudimental Free-hand Drawing, and whose names were received before November 15th, failed to gain admission for want of room. No estimate was made of the large number who applied later in the season, but whose applications were not placed on file for the reason that there was no possibility of admission during the current session.

The classes in Ornamental Drawing, Decorative Designing, and Clay Modeling, were kept well filled during the season. and all fit applicants were admitted.

The work of re-admitting and classifying the pupils of the past session for the term beginning next October, is already completed. Seven hundred and seventy-five (775) names are thus enrolled for the Art School of next Fall.

In the Scientific Department the number admitted was three hundred and thirty-seven (337). The full classes are naturally those engaged in the first year's course of study. It was necessary to decline many applications for the classes in Algebra and Geometry; the class-rooms would not contain them. The second, third, and fourth year classes were of about the usual dimensions; and the pupils counted in each class amounted, in all, to one thousand four hundred and seventeen (1,417).

The fifth year, or A Class, consisted of ten (10) members who completed the prescribed work for the term. Eight (8) of this number having completed the five years' course, are hereby recommended to the Board as candidates for graduation, and to receive as such the Diploma and Medal of the Cooper Union at the commencement exercises of the 28th inst. Their names are Frances Bernhardt, George R. Comings, James A. Connell, John H. Gass, Arthur B. Kelly, Louis Nashelsky, Alfred F. Richardson, Albert H. Van Voorhis.

The plan of awarding certificates heretofore followed has been somewhat modified this season. Those pupils who completed a single subject only received a card specifying the subject and certifying to the proficiency of the pupil. Only those who had satisfactorily completed all the subjects of a class received a certificate of the old pattern.

In the Art School the card certificates were awarded to the pupils who gave evidence of the required proficiency in the first or second year's course. The large certificates were given only to the pupils who had completed the course of drawing in their respective sections.

The total number of certificates awarded in the Art School was five hundred and forty (540), four hundred and forty-seven (447) card certificates, and ninety-three (93) full course certificates. In the Scientific Department five hundred and fifty-four (554) card certificates, and one hundred and one (101) full course certificates were awarded. The complete list of successful pupils will be found in the general summary.

The lectures on Chemistry, Physics, Astronomy, and Mineralogy were well attended throughout the season.

Arrangements are completed for opening the Scientific Department on October 1st, next, and the Art Schools on the 6th.

Respectfully submitted,

GEO. W. PLYMPTON,
Director.

NEW YORK, May 5, 1884."

The Summary of attendance for the year 1883-84 is as follows:

"THE FREE NIGHT SCHOOL OF ART.			
Perspective Drawing.....	67	28	21
Mechanical Drawing.....	380	184	95
Architectural Drawing.....	260	167	88
Drawing from Cast.....	92	56	26
Form Drawing.....	67	36	33
Decorative Designing.....	240	134	97
Ornamental Free Hand.....	346	168	62
Rudimental Free Hand.....	365	162	70
Modelling in Clay.....	139	78	38
Total in School of Art.....	1,956	1,013	530
Grand Total.....	3,773	1,863	1,084

GEO. W. PLYMPTON, A. M., C. E.,
Director."

As stated in the preceding account of the Cooper Union, there were no annual reports issued after that published May 28, 1884, until the pamphlet of May 28, 1887, which comprised the 26th 27th and 28th Annual Reports.—During this long period occupied by the repairing of the building, the Library, the Reading Room, and the Great Audience Hall were closed. The latter, however, was ready for the course of Free Saturday Night lectures for 1886-7. The opening lecture of the course was given November 20th 1886.

The following is the Annual Report of the Director for the year 1886-'87.

REPORT OF THE DIRECTOR OF THE FREE NIGHT SCHOOLS IN SCIENCE AND ART.

To the Board of Trustees of the Cooper Union.

GENTLEMEN: The session of the Night School for the term of 1886-87 ended with the distribution of certificates on the evening of Friday the 22d of April.

The attendance has been good throughout the term and the classes have fully completed the usual amount of work. The number of pupils who received certificates was larger than usual, notwithstanding the fact that the standard of proficiency in the mathematical studies has been slightly raised within the last two years.

The number of tickets of admission issued for the art classes was eighteen hundred and twenty-three (1,823), of which number one hundred and thirty (130) failed to present themselves for admission. Four hundred and twelve (412) applicants failed to gain admission for want of room. Each of these latter is the holder of a ticket indicating by a number the order of his application, and a printed direction to renew the application during the first week in June. The rule that the admissions to each class shall be in the order of the applications received, has been strictly followed through the term.

The total number admitted to the scientific classes was four hundred and twenty-eight (428). The number of regular attendants at the lectures upon Physics, Chemistry, Geology and Astronomy, who are not counted as members of the school, was not less than one hundred and fifty (150).

Rather more than the usual number of our pupils have this year been offered employment in manufactories; the demand having been chiefly for mechanical and architectural draughtsmen.

In this connection it is worthy of mention that the engineer in charge of the construction of the iron bridge at Poughkeepsie is a graduate of our scientific course (John F. O'Rourke, class of 1876.)

The graduating class of this year has numbered sixteen members, of whom the following, eleven in number, have completed the full scientific course, and are hereby presented as candidates for graduation. They have fulfilled the prescribed conditions and are entitled to the medal and diploma of the Cooper Union:—Joseph Bradley, Frank Creelman, Albert H. Dakin, Jr., Harry L. Dessar, Julius Erlandsen, Anthony J. Griffin, George Guerdan, Francis O'Neil, Edwin R. Storm, Louis Trost, Charles L. Tyner.

A complete list of pupils in both departments who received certificates is given in the general summary.

The promotion and re-classification of the pupils of the Art school for the next session was completed before the close of the term.

Respectfully submitted,

GEO. W. PLYMPTON,
Director of the Night School,

The reports for the two previous years are not given, but the "Summary of attendance" is given for each year, as follows:

The Free Night School of Art.

TERM OF 1884-1885.

Classes.	Admitted during the term.	Remaining at close of term.	Number that rec'd certificates.
Perspective Drawing.....	60	34	27
Mechanical Drawing.....	391	184	82
Architectural Drawing.....	290	137	81
Drawing from Cast.....	114	61	23
Form Drawing.....	97	42	10
Decorative Designing.....	226	122	111
Ornamental Free Hand.....	314	162	75
Rudimental Free Hand.....	346	135	59
Modeling in Clay.....	136	63	33
Total in School of Art.....	1,964	940	501
Total in School of Science.....	1,313	869	547
Grand Total.....	3,277	1,809	1,048

TERM OF 1885-1886.

Perspective Drawing.....	52	21	19
Mechanical Drawing.....	361	172	77
Architectural Drawing.....	324	156	90
Drawing from Cast.....	109	40	27
Form Drawing.....	102	51	36
Decorative Designing.....	223	105	66
Ornamental Free Hand.....	270	153	70
Rudimental Free Hand.....	320	118	58
Modeling in Clay.....	143	67	34
Total in School of Art.....	1,904	883	477
Total in School of Science.....	1,421	816	516
Grand Total.....	3,325	1,699	993

TERM OF 1886-1887.

Perspective Drawing.....	60	18	16
Mechanical Drawing.....	445	174	108
Architectural Drawing.....	427	189	111
Drawing from Cast.....	102	56	48
Form Drawing.....	98	49	48
Decorative Designing.....	207	81	73
Ornamental Free Hand.....	355	142	90
Rudimental Free Hand.....	434	126	98
Modeling in Clay.....	139	57	47
Total in School of Art.....	2,267	892	639
Total in School of Science.....	1,222	654	499
Grand Total.....	3,389	1,546	1,138

GEO. W. PLYMPTON, A. M., C. E.,

Director.

The following is the report of the Director of the Free Night Schools in Science and Art for the year 1887-'8.

REPORT OF THE DIRECTOR OF THE FREE NIGHT SCHOOLS IN SCIENCE AND ART.

To the Board of Trustees of the Cooper Union.

GENTLEMEN:—The term of the Night Schools for 1887-'88 closed with the distribution of certificates on the evening of Friday, April 20th.

There have been no interruptions to the regular routine work of the session. The attendance has been good, and the results, as shown by the final examinations are satisfactory.

The number of admission tickets issued to applicants for the Art School was two thousand, one hundred and thirty (2,130). Of this number one hundred and sev-

enty (170) failed to present themselves. The number of applicants who failed to gain admission for want of room was five hundred and forty-one (541).

The total number of admissions to the Scientific Department, exclusive of the Literary Class, was nine hundred and fifty-two (952). Some three hundred (300) more were regular attendants upon one or more of the lecture courses, but were not registered as pupils.

The demand for young men who have acquired some skill in drawing has continued quite steady throughout the year.

The full course in Chemical Analysis, which requires the work of three years in the Laboratory, has been completed by four members of this year's class, who are, therefore, entitled to the diploma. Their names are: Robert O. Bogart, Arthur R. Bräunlich, Harry P. Campbell, Edward C. A. Krafft.

The "A" Class, this year, has numbered nineteen. Those members of the class whose names follow, having completed the full Scientific Course, are hereby presented as candidates for graduation: Elmore F. Austin, Leander B. Bigelow, Edward J. Donnelly, George E. Doty, William R. Hill, James E. Maloney, Eugene R. Pommer, Bernard Rolf, Charles A. Lahr, Edward L. Hartmann, James E. Tower, Fernand de Tranaltes, Bernard M. Wagner.

A complete list of pupils who received certificates is given in the Summary Report.

Respectfully submitted.

GEO. W. PLYMPTON,
Director of the Night Schools.

The following description of the several drawing classes is from a copy of "Rules and Regulations."

The several classes of the Art School are as follows:

RUDIMENTAL DRAWING.

This is the class for beginners in free hand drawing from copy or simple models. The lower divisions of the class copy simple ornamental designs and the more advanced are engaged in Figure Drawing; copying lithographs of human heads.

ORNAMENTAL DRAWING.

Pupils require the preparation of at least one term in the Rudimental Class or its equivalent before entering this class. The work consists in drawing with pen or pencil the more intricate ornamental forms employed in decoration.

DECORATIVE DESIGNING.

This class is intended to aid a large class of young artisans whose work requires the frequent invention of ornamental forms. The class are specially instructed in combining simple figures to form ornamental patterns. The practice involves some geometrical drawing and some coloring. A term in the Rudimental Class is a desirable preparation for this class, though not indispensable.

FORM DRAWING.

The pupils in this class draw from plaster models; mostly relief ornaments of moderate size.

Two terms of free hand drawing from copy are regarded as a necessary preparation for this class.

CAST DRAWING.

The work of this class consists in drawing from models of antique statuary. Only those who have acquired a good degree of proficiency in free hand drawing are encouraged to enter this class.

MECHANICAL DRAWING.

Pupils in this class draw from the first with instruments. A complete three years' course is provided for, beginning with simple geometrical problems and ending with the finished shaded drawings of complex machines. The class is in four sections and under two different instructors.

ARCHITECTURAL DRAWING.

There are five sections of this class under charge of three different instructors. Two different objects are attained in the course: 1st, the ability to draw ornamental architectural designs according to conventional rules; and, 2nd, skill in the preparation of working drawings from given dimensions.

MODELLING IN CLAY.

This is for workers in terra cotta, stucco, marble-cutters, and all whose work is relief decoration.

PERSPECTIVE DRAWING.

To enter this class some knowledge of geometry is necessary. Ladies are admitted.

THE FREE NIGHT SCHOOL OF ART.

Summary of Attendance for 1887-1888.

Classes.	Admitted during the term.	Remaining at close of term.	Number that rec'd certificates.
Perspective Drawing.....	70	40	11
Mechanical Drawing.....	440	190	123
Architectural Drawing.....	370	177	131
Drawing from Cast.....	141	56	56
Form Drawing.....	101	58	51
Decorative Designing.....	238	87	61
Ornamental Free Hand.....	297	153	110
Rudimental Free Hand.....	305	127	103
Modelling in Clay.....	165	55	39
Total in School of Art.....	2,127	943	685
Total in School of Science.....	954	587	455
Grand total.....	3,081	1,530	1,140

GEORGE W. PLYMPTON, A. M., C. E.,

Director.

REPORT OF THE DIRECTOR OF THE FREE NIGHT SCHOOLS IN SCIENCE AND ART.

To the Trustees of the Cooper Union:

The work of the Night Schools for the term of 1888-89 closed with the distribution of certificates on the evening of Thursday, April 18.

The examinations of the preceding week afforded good evidence of industry and fidelity on the part of both teachers and pupils. In the Scientific Department the number presenting themselves for examination was unusually large—in the first and fifth year classes larger than ever before. In the work of the Art School is exhibited a greater variety of drawings than in previous years, and their quality is very satisfactory.

The number of applications for admission to the Art School during the year was two thousand eight hundred and sixty-eight (2,868). The number that received tickets of admission was two thousand one hundred and forty-seven (2,147).

In the Scientific Department the sum total of the class lists was nine hundred and eighty (980). This is exclusive of the Literary Class and also of the regular attendants upon the scientific lectures who do not register as pupils.

These latter number not less than three hundred (300).

The highest class this year has contained twenty-four pupils, of whom twenty, having completed the prescribed course, are entitled to receive the Cooper medal and diploma. The full course in chemical analysis, which requires the work of three years in the laboratory, has been completed by two members of this year's class, who are therefore entitled to receive the diploma.

The names of the graduates of this year, together with the names of those to whom prizes and certificates have been awarded, will be found in the Summary Report.

Respectfully submitted,

GEORGE W. PLYMPTON,
Director of Night Schools.

REPORT OF THE DIRECTOR OF THE FREE NIGHT SCHOOLS IN SCIENCE AND ART.

To the Trustees of the Cooper Union:

GENTLEMEN: The regular session of the night school for the term of 1889-90 closed with the distribution of certificates on the evening of Friday, April 18th.

The attendance throughout the term has been good. The elementary art classes were kept filled by recruiting as fast as vacancies occurred, from the large list of waiting applicants. The scientific classes were as usual filled to the limit of capacity of the recitation rooms until the first of November. After this date only those applicants are encouraged to enter the mathematical classes who are able to keep up with the progress naturally belonging to the second month of the course.

The lecture courses were well attended throughout the season. The new course in Electrical Measurements proved as attractive to electricians as to students. The present plan in regard to this course allows the third year pupils of the scientific course to choose between Geology and Electricity, only one of the two subjects being *required*. Geology is the subject of Friday night lectures from the beginning of the term until the holiday vacation, then Electricity is presented until the close of the school year. A knowledge of the mathematics of the course up to the middle of the third year is requisite to enter the electrical class.

The number of admission tickets issued to applicants for the art school was 2096. Of this number 545 failed to present themselves. The number of applicants who failed to gain admission for want of room was 789. The total number of admission to the scientific department was 1009. This is the sum total of the class lists and represents 416 different pupils. Fully 300 more availed themselves of the privilege so freely granted here and became regular attendants at the lectures without registering their names.

The full three years' course in Chemical Analysis has been completed by five pupils who are therefore entitled to the diploma for this course.

The highest class this year in the scientific department has numbered nineteen pupils, of whom twelve having completed the prescribed course are entitled to the medal and diploma.

The names of the graduates, together with a complete list of all who received certificates and prizes, will be found in the Summary Report.

Respectfully submitted,

GEORGE W. PLYMPTON,
Director.

REPORT OF THE DIRECTOR OF THE FREE NIGHT SCHOOLS IN SCIENCE AND ART.

To the Trustees of the Cooper Union:

GENTLEMEN: The routine work of the night schools for the season of 1890-91, ended with the distribution of certificates, on the evening of Friday, April 17th.

The report of attendance during the last month of the season exhibits the fact that not only was the number of pupils equal to the maximum for the same period

of former years, but that the proportion of the total who completed the reviews and came to the final examination, was much larger than ever before.

The number of admission tickets issued to applicants to the Art School was 1,917. Of this number, 520 failed to present themselves. The number failing to gain admission, for want of room, was 830. In the Scientific Department, 1,098 admissions were granted to the several classes, this number representing 425 different individuals. Fully 300 more were regular attendants upon one or more of the course of lectures.

The number of pupils pursuing the fifth year course of the Scientific Department was 21. Of this number, 15 have completed the prescribed course, and are therefore entitled to receive the Cooper Medal and Diploma. Their names are as follows: Wm. H. Cherry, Wellington L. Eckerson, Annie M. Ettinger, Chas. A. Hennessey, Frank Herzog, Ira B. King, Emil J. R. Lawrenz, Alexander Nagy, John C. L. Rogge, Chas. L. Sanial, Chas. J. Stevenot, C. Edmund Stubbe, Charles Tilgner, John H. Tomlinson, Justus M. Ueffinger.

The names of the students to whom certificates and prizes were awarded will be found in the Summary Report.

Respectfully submitted,

GEORGE W. PLYMPTON,
Director.

THE FREE NIGHT SCHOOL OF ART.*

Summary of Attendance for 1890-91.

Perspective Drawing.....	80	23	17
Mechanical Drawing.....	399	172	134
Architectural Drawing.....	360	197	122
Drawing from Cast.....	105	50	44
Form Drawing.....	116	73	45
Decorative Designing.....	216	140	88
Ornamental Free Hand.....	253	153	94
Rudimental Free Hand.....	215	142	105
Modelling in Clay.....	173	89	64
Total in School of Art.....	1,917	1,039	713
Total in School of Science.....	1,035	796	554
Grand Total.....	2,952	1,835	1,267

INSTRUCTORS OF THE FREE NIGHT SCHOOL OF ART, 1890-'91.

Geo. W. Plympton, A. M., C. E., Director of Night Schools, and Professor of Physics, Astronomy and Applied Mechanics.

Joseph E. Ane, Instructors in Mechanical and Perspective Drawing.

J. A. Saxton, A. M., Edwin R. Storm, Instructors in Geometrical and Mechanical Drawing.

E. C. Miller, Edward A. Miller, Emil F. Maurer, Instructors in Architectural Drawing.

J. A. McDougall, Instructor in Cast Drawing.

A. M. Turner, Instructor in Form Drawing.

Max Eglan, H. G. Plumb, Instructors in Drawing from Copy.

Edward Ehrle, Instructor in Industrial Drawing and Design.

Stanislaus Rasario, Instructor in Modelling in Clay.

* In the Night School of Art 520 persons to whom tickets of admission were sent, for various reasons failed to present themselves or were not registered as students.

THE PRATT INSTITUTE, BROOKLYN, NEW YORK.

For some years a rumor had prevailed to the effect that Mr. Charles Pratt, a well known business man in New York City, was erecting a large building in Brooklyn, his place of residence, which was intended for a public educational institution of some kind; but exactly what, no one seemed to know.

Finally, in the spring of 1887, a bill for the incorporation of The Pratt Institute was passed by the State Legislature of New York, and in this, the purpose of the new institution was definitely stated.

The Institute was formally opened in the autumn of 1887.—The calling, a year or two before, of Mr. Walter S. Perry, then the Supervisor of drawing in the schools of Worcester, Massachusetts, to Brooklyn, in connection with this new undertaking, was an indication that Industrial Art Drawing and the claims of artistic training in connection with Industries, were not to be ignored in the new enterprise; beyond this, there was then little to indicate in what direction the new undertaking was to be developed.

It will be seen by a perusal of the act of incorporation just referred to, that the nature and purpose of the proposed institution are clearly set forth in that instrument. In addition to this, a charmingly illustrated pamphlet bearing the broad seal of the Institute and the date of 1888, contains views and floor plans of the buildings with full statements in regard to each of the departments; for the Institute is now (in the autumn of 1888) well under way, with a number of departments already opened and a large aggregate attendance of pupils. Additional Departments will be opened as required and facilities are provided for a great increase of attendance. In the number of "The Scientific American," of New York, issued October 6th, 1888, there is a descriptive article of "The Pratt Institute for Industrial Education, Brooklyn, N. Y.—The largest Institution of the kind in the World"—illustrated by some twenty wood engravings, giving views of the buildings and of the school rooms, art rooms, work rooms, reading room, library and museum hall; in which the pupils are seen busily engaged in the occupations of their several rooms. The completeness of the facilities provided is thus seen at a glance, and the wide embracing scope of the institution readily realized. It offers to youth of both sexes, such opportunities for educational, industrial, and artistic development, as are not, as yet, afforded in the public schools, and while by these courses for the graduates of the public schools, it supplements the

education given in them, it also further provides in the "evening classes" for those who are occupied through the day, the opportunity of pursuing the studies which may prove most useful to them in their several avocations. In addition, the Institute gives a regular course of graded instruction for both boys and girls, lasting for three years.

From the letter given below it appears that Mr. Pratt, has been led by the example of Peter Cooper and others, to dedicate a portion of his ample fortune to the service of his fellow men. The late well known philanthropist Mr. George Peabody is said to have made a similar statement as to the influence of Peter Cooper's action on himself. This stimulus of others to like, or greater efforts, is one of the rewards of such wise philanthropy as inspired the lives of Stephen Girard, Peter Cooper, George Peabody, Paul Tulane, and their compeers; who, not only do good themselves but inspire others to do likewise, and so their services to humanity are multiplied indefinitely. Among this honored list of the world's benefactors Charles Pratt, of Brooklyn, has elected to enroll his name.

The practical men whose names have just been recorded, have avoided an error into which many other generous givers have incontinently fallen, thereby seriously limiting the usefulness of their gifts; that is the giving to an institution of learning, some specific gift, like a building or buildings, a library, or a museum, and failing to supplement the gift by any income bearing foundation. So that often, a college, instead of being helped by the bounty which was to immortalize the giver, has found itself burdened and hampered by the very terms of the gift,—generous and grand in itself, but becoming, from lack of such provision for its own support, a burden on the institution which it was ostensibly given to benefit;—not unlike the traditional fatal gift, to a subject, of a white elephant by the Kings of Burmah.

Mr. Girard, left valuable city real estate, the income of which should be applied to the support of the Apprentice School he founded; George Peabody, gave interest bearing bonds in addition to the specific gift of building, or library; Paul Tulane, gave city real estate; Peter Cooper, provided in his great building, income producing facilities; and Mr. Pratt, it is understood, has dedicated a large rent producing property,—known as "The Astral Apartments," Brooklyn,—to the support of the grand institute he has already so liberally endowed with buildings, fixtures, books and apparatus.

The example set by these practical business men is one which should be carefully considered and closely imitated by all givers who desire to have their gifts of use, and who do not give in mere ostentation.

I am indebted to the courtesy of Mr. Pratt, who is still actively engaged in business and is, apparently, in vigorous health, for the

materials from which this account of the Institute is compiled, and for the following letter written in reply to my inquiries and which I have obtained his permission to insert. As a chapter of autobiography it possesses special interest; it also explains the causes which led to the undefined rumors, already alluded to as prevailing during their construction, as to his purpose in erecting the buildings. The Adelphi Academy mentioned by Mr. Pratt, has been, for many years, a famous educational institution in the city of Brooklyn, in which neighboring city, Mr. Pratt, in common with many others doing business in New York, resided.

In response to an inquiry addressed to Mr. Pratt, as to the origin of his purpose in founding this noble educational institution, the following letter was received :

"NEW YORK, October 25, 1888.

DEAR SIR:—It is so easy to be misunderstood I almost hesitate to answer your question as to what led to the establishment of Pratt Institute. If you will accept a hasty dictation I will give you the inside so far as I am able to tell it.

In reply to your inquiry as to the place of my birth, would say that I was born at Watertown, Mass., October 2nd, 1830. In my early youth I had to struggle, as most young men do, for a living. At first I worked on a farm, but finally learned a trade and then at about 19 years of age went into commercial business. Twenty or more years ago when I began to have a family ready for school, I felt the need of a place for their education, which led me to become connected with the school to which they went—the Adelphi Academy. My connection and acquaintance with the working of that institution for the past twenty-years, and my interest in the young, led me to feel, as soon as my business promised a competency, that I would try and do something for young people situated as I had been. In a word, I thought I could derive more satisfaction in the use of money by helping other people than I could by giving all my energy to its accumulation. Those who know my life for the last thirty years will know that my actions have been consistent with this thought.

It has required no little courage to undertake the establishment of this enterprise. Any person who has been successful in business hesitates to start in untried enterprises. I had theorized for many years as to the kind of scheme I would like to work out, but did not see the way clear to its organization and management. Finally, however, I decided to buy the ground and begin the construction of buildings, saying nothing in particular to any one as to what I intended doing, so that no one need to share in the disappointment, should the enterprise not meet with success. Am glad for the success which has attended it, and have great pleasure in contemplating what I believe to be its great future. I want Pratt Institute to be a model, and to do the experimental work of this kind of education for the people of this country. All the plans, all the work we have, is at the disposal of any individual or institution that would like to start a similar work.

So far as the endowment is concerned, I have made no promises. Have invested something over \$1,000,000 in land for the buildings and play-grounds, and in the "Astral" and other property, the income of which is directly devoted to the support of the Institute. If I am spared and the undertaking is prosperous, I shall be glad to do all I can for it. My purpose is to try and make it self-sustaining as far as possible, out of tuition; but the Library and Museum cannot be carried on without a liberal endowment, but I have felt there was no good to come from any particular promises as to what I would do in this direction. The quality of the work will be a better estimate of the value than promises of large amounts of money.

The example set by Peter Cooper, George Peabody, and many others before and since their time, have been an inspiration and help to me, and my hope is, that what I have done, so far as it may go, will be an inspiration and help to other people who have means (while they have their health, and are in possession of their faculties) in creating a desire to devote their means and energies in a similar direction.

Your question as to the proportion the income bears to the expenses of the Institute, I cannot answer at all satisfactorily; but, roughly, I should say that our general expenses have been, so far, from ten to twenty dollars for every dollar received from tuition, but I am in hopes we will have a better showing in the course of a few years. If the Institution is kept full the large number will make a small tuition go a long way towards covering the expenses.

As to our capacity for students; with day and evening classes, (where people take one or two lessons per week in specific work), in connection with regular students who are there every day, you will see the difficulty of answering your question; but we have hoped that we would be able to accommodate from 4,000 to 5,000 students each year.

Very truly yours,

CHAS. PRATT."

The act of incorporation which bears date May 19th, 1887, provides as follows:

SECTION 1. Charles Pratt, Charles M. Pratt, Clarence Vose and their successors are hereby constituted and shall forever continue to be a body corporate by the name of Pratt Institute.

The five sections which follow, confer upon this corporation all the powers given to corporations by the general statute; create these three incorporators into a Board of Trustees who are empowered to exercise all the powers of the body corporate and a majority of whom may exercise these powers; authorize the appointment by them of an "Advisory Board" to be composed of not more than fifty members of both sexes. The Board of Trustees may enlarge their own number by election up to fifteen members, or may diminish it to the original number of three, by omitting to fill vacancies. Other provisions relate simply to details of elections, etc.

The remaining sections which relate to the purposes and powers of the institution are given below:

SEC. 7. The purposes of said corporation are, and it is hereby empowered, to establish in the city of Brooklyn an educational institution in which persons of both sexes may be taught, among other things, such branches of useful and practical knowledge as are not now generally taught in the public and private schools of said city. The special aim shall be to afford opportunities for persons of both sexes to become acquainted with what is best in manufactured materials, fabrics, wares and arts, and so to educate the eye and hand in the practical use of tools and machinery that students may be encouraged to emulate the best models and be enabled to accomplish the best possible work in one or more branches of art or manufacture, either useful or ornamental. The trustees shall have power to decide what particular branches of art, manufacture and science shall be specially taught, but a leading object shall be to teach those having reference to the construction of healthy and comfortable homes, to the furnishing and adornment thereof, to matters of household economy and home management, the preparation of clothing, useful

and ornamental: of economic and wholesome foods, and such instruction in sanitary laws and the laws of hygiene as shall tend to secure comfortable and healthy homes at the least expense, and also a careful regard for bodily health. It shall also be an aim of the institution to afford such instruction as shall best enable men and women to earn their own living by applied knowledge and the skillful use of their hands in the various mercantile, mechanical, and mining and manufacturing establishments of our country, also in all branches of architecture, also by painting, decorating, music, bookkeeping, stenography, typewriting and kindred industries. The said trustees and their successors shall have power to adopt such means as shall seem to them best calculated to accomplish the foregoing aims, or such portion of them as can be successfully accomplished and to fix from time to time such rates of compensation for the privileges of the institution as they may deem advisable and necessary, the same to be as low as the necessities of the institution will permit. All income from tuition and all revenues of every kind shall be devoted solely to the purposes of this institute.

SEC. 8. It is the further purpose of said corporation, and it is hereby empowered to establish and maintain in the City of Brooklyn a free public circulating library and reading room, with one or more branches, and, so far as it may seem to said trustees expedient, to promote mental improvement by means of lectures, discourses, collections of objects of art and science and other suitable means.

SEC. 9. The said library or libraries and galleries of art and science shall be accessible at all reasonable hours and times for general use, free of expense to persons resorting thereto, and books may be taken therefrom subject only to such control and regulations as the said trustees from time to time may exercise and establish.

SEC. 10. For the uses and purposes aforesaid the said corporation is authorized to take by grant, devise, bequest, gift or otherwise, and to hold, lease, sell and convey any real and personal property, and to erect all necessary and suitable buildings, and any property in the city of Brooklyn actually occupied and used for the purposes aforesaid, or the revenues of which are exclusively devoted to the purpose aforesaid, shall not be subject to taxation, but this exception shall not apply to any property in excess of the value of three million dollars.

SEC. 11. The said trustees shall elect one of their number to preside over them, who shall hold such office during their pleasure; and they may appoint and at any time remove a secretary, treasurer and such other officers and agents as their business may require. The trustees shall not receive any compensation for their services.

SEC. 12. The trustees of the corporation hereby created may confer degrees and diplomas for proficiency in science, arts, philosophy or letters.

SEC. 13. The said corporation shall not contract any pecuniary obligations for any year to any greater amount, including liabilities already existing at the beginning of the year, than the net income at its disposal for such year; it being intended hereby that said corporation shall never be in debt beyond the amount of its current net annual income. For any debt incurred beyond such limitation the said corporation shall not be liable, but such trustees as voted in favor of contracting such debts shall be personally liable for the excess thereof.

SEC. 14. The supreme court shall possess and exercise a supervisory power over the corporation aforesaid, and may, at any time, on reasonable notice of application therefor to the trustees, compel from them a full account of the execution of their trust; and they shall at any time render such account upon the request of either branch of the legislature.

SEC. 15. This act shall take effect immediately.

It will be observed that, while the general intent of the institution is very clearly and definitely stated, the educational feature of

which is comprised in the purpose of giving to pupils of both sexes, such instruction in practical industries, artistic and otherwise, as shall increase the wage-earning capacity of the individual, and such, also, as may conduce to the health and comfort of home surroundings, yet the details of the methods to be used are left wholly in the discretion of the Trustees. No hard and fast lines or limits are established. The Trustees of this Institution, like those of that other noble educational benefaction, Smith College, at Northampton, Massachusetts, are wisely left with full liberty to change, modify or enlarge the plans, methods and courses of instruction, in such ways and to such an extent as the changing circumstances of coming years may make desirable. These provisions, when contrasted with the defined methods and limits formerly established by the founders of educational institutions, mark a distinct step onward in the march of civilization.

There are two other significant conditions definitely stated, first: that this institution is to provide such practical training as is *not* now generally taught in the public schools of Brooklyn, and second: that equal provision is made in the act for the education of girls, as for boys.

Each of these features mark an educational advance not unlike that which was first enacted by the Massachusetts law of 1870 putting Industrial art drawing in the courses of the common schools of the State.

While the general similarity of purpose between Cooper Union, and The Pratt Institute, may be readily traced, there are features of the latter which, to the educational observer, definitely mark the era of its foundation; as, for instance, the extensive provisions made for "Manual Training," which educational feature was yet unknown when the Cooper Union was founded.

In their liberal provisions for the intellectual interests of the general public the two institutions are similar, though the circulating features of the Library of the Pratt Institute, gives to the community at large, a more direct interest in that Library; since its treasures enter into the home life while no books are given out by the Cooper Union.

In the features of his endowment already indicated the liberal and comprehensive views of Mr. Pratt, in founding this Institution, are clearly shown. If like length of days shall be vouchsafed to him, as were enjoyed by his fellow philanthropist Peter Cooper, the Institute which bears his name may confidently be expected to expand and develop to meet the needs and demands of the near future, while the experiences of actual working may somewhat modify and change the initial plans; though the latter seem well adapted to meet the needs of the time and fully abreast of the present educational demands.

It is a hopeful indication that Mr. Perry, was so early summoned by Mr. Pratt, and that the department of Drawing, was the one first opened. That was an emphatic recognition of the fact that a thorough knowledge of drawing is the basis of all skill in industries, as well as of all training in Art.

The Pratt Institute, belongs to the same class of eclectic institutions which are treated in these immediate chapters, and which have been developed in our cities, either by individual or associated effort. These each comprise varied and sometimes seemingly incongruous purposes and instrumentalities. It generally happens that, in time, one or two of the special features overpower the others and absorb most of the activities of the Institution in a way not anticipated by their founders. Whether the Pratt Institute, will prove an exception to this general rule remains to be seen.

In the Free Reading Room, the Circulating Library, the provision for public lectures, and in the Technical Museum, The Pratt Institute serves and appeals to, the community, on grounds entirely distinct from its school features.

In its department of Mechanic Arts, it aims to do the work of the modern Typical Manual Training Schools and of the Night Schools of Mechanical and Industrial Drawing.

In its department of Building Trades, it organizes a class of Trade Apprentice Schools like those founded by Mr. Auchmuty, in New York, some years ago.

In its department of Domestic Science, with Cooking and Sewing Schools, it provides for girls, training similar in purpose to that given the boys in the Manual Training and Evening drawing classes; while the Millinery and Dressmaking classes are analogous to the Apprentice Trade School classes in plumbing and masonry.

It is in its School of Art and Design, especially in connection with the Technical Museum, so well begun, that a beneficent, direct influence upon the industries of the community may be looked for; and it is in this class of art work so urgently demanded in America, that its greatest development seems most desirable.

Such art work as that enthusiastic and capable Art Master, Mr. John Ward Stimson, sought to accomplish in the schools under the auspices of the Metropolitan Museum, and, strangely thwarted there, now seeks to have established by associated effort in New York City. This undertaking can hardly fail of success if there is any real desire on the part of the wealthy citizens to promote Art, other than to idly pose as generous patrons of an art museum, on the strength of giving some work of foreign artists to its collections;—a good thing to do, but barren of much result unless supplemented by direct effort in the way of well equipped art schools, led by artists who can wisely direct the scholars and awake their enthusiastic de-

votion to their severe mistress Ideal Art; without whose inspiration Industrial Art is an impossibility.

Such work as, in Philadelphia, Mr. L. W. Miller, has accomplished in the art classes of "The Pennsylvania Museum and School of Industrial Art," and as Miss Emily Sartain, has given in the "Woman's School of Design." Such work as Professor Fuchs, does in the "Maryland Institute" art classes in Baltimore, and that which Mrs. Carter, promotes in the classes of "Cooper Union," New York.

In the present zeal for mere industrial education, it seems, at times, as if the more essential needs of art education, were in imminent danger of being lost to sight.

It was shrewdly said recently by Mr. William Sartain, the well known artist of New York who lived long in Paris, that the chief cause of the artistic superiority of all French fabrics and art goods, lay in the fact that so many French artists gave themselves to the work of making designs for the artificers. Thoroughly trained in the principles of art and skilled in manipulation, masters of drawing and deft in the blending of colors, these French artists win for their country the mastery of the markets of the world. It is only by such methods that the industries of a country can become artistic.

A recognition of the possibilities which attach to the noble foundation provided in the Pratt Institute, has led me, for a moment, away from the recital of the number of rooms and benches—the implements here collected—to the thought of what a power for good is here placed in the hands of Mr. Perry, if he be encouraged to develop art in his school so that, eventually, his trained artists may be able to develop artistic industries.

I do not by any means forget that Mr. Pratt, in common with his predecessors in similar efforts—Mr. McDonough, Mr. Girard, Mr. Cooper, the founders of the New York Society of Mechanics and Tradesmen, and the many promoters of free industrial schools and evening classes, throughout the country; had, for his direct purpose, the giving of wage-earning power to the pupils reached by his benefactions. To offer to earnest, ambitious youth, opportunities for education unattainable elsewhere; and, also, by means of free support and instruction given to orphans, as in Girard College, or, by opening free drawing schools in cities, to transform otherwise idle and helpless members of the community into industrious self helpful citizens, were the intelligent purposes of all these practical philanthropists.

To give such opportunities to youth seeking special industrial training is to do a great and needed work and one for which, as will be seen, unusual facilities have been provided by Mr. Pratt.

It need in no wise curtail or retard these activities, if the broad foundation already laid by the endowment of the School of Art and Design under the direction of Mr. Perry, and by the desirable col-

lections already placed in the Technical Museum, shall be still further developed in the direction of High Art on the one hand, and, on the other, in the direction of the technical applications of Art to industries; such as are to be seen in the weaving school, and in the new chemical and dyeing departments, recently added to the "Pennsylvania School of Industrial Art" of Philadelphia, under the charge of Mr. Miller.

Indeed in the combination of the school of Art and the Museum, the Pratt Institute closely resembles this admirable Pennsylvania Institution which was the beneficent outcome of the Centennial Exposition.

If the Pratt Museum shall be as well equipped in the Department of Textiles, as it evidently now is in those of Ceramics, Glass, Enamels, and Metal Working, it will be practically equally valuable as is the Philadelphia Museum, in its direct utility to the school.

The experience of the French seems to demonstrate that the surest way to develop a race of successful designers, for artistic industries is to train large numbers of pupils in the Schools of High Art. To give the art instruction first, and wholly without reference to its application to the industries; letting the artists direct this art knowledge to whatever end may subsequently seem desirable.

This is so contrary to the idea which seems to prevail in this country and, moreover, the present educational impetus towards a more industrial "practical" training is so well nigh irresistible, that I may, perhaps, be pardoned for expressing, in this connection, the hope that in this grand modern institution so lavishly endowed by Mr. Pratt, there may be found room, both for this general training in High Art, without which artistic industries starve; and also that opportunities may be here afforded for giving such technical training in the chemistry of colors as is essential to the art of the dyer; and that looms, and other requisite machinery, may be provided for giving such experimental practice in the weaving of fabrics, as is indispensable to the efficient practical training of Designers of Patterns for the Weaver.

THE OPENING OF THE INSTITUTE.

The Pratt Institute, was first opened to pupils in October, 1887. The Drawing Department under Mr. Perry, was the first to open. Twelve pupils attended, and, owing to delays in putting in the lighting and heating apparatus in the building, there were only thirty-six pupils in attendance at the close of the year 1887. This was soon changed when the Institute was fairly open; and in the six departments a total of 1,072 pupils are reported as in attendance, on October 25th, 1888, with a corps of thirty teachers. Eight persons also are employed in the Library and Reading room. Including the clerks in the office, the helpers in the cooking department and the

engineers, watchmen, janitors and mechanics engaged in various duties about the large buildings, there are, in all, some eighty persons actively employed in the daily work of the Pratt Institute.

The following description of the buildings and the appliances therein provided is compiled from the article in the *Scientific American* of October 6th, 1888, and from the pamphlet issued by the Institute.

The pamphlet begins with the following statement of the

PURPOSE OF THE PRATT INSTITUTE.

The Pratt Institute has been established after many years' study on the part of its founder, Mr. Charles Pratt, of Brooklyn. Its object is to promote manual and industrial education, and to supplement this latter by advanced work in science and art.

It is now generally recognized that manual training is an important and necessary adjunct to the education of the schools, and that mind and eye and hand must together be trained in order to secure symmetrical development. Manual training aims at the broadest, most liberal education. While developing and strengthening the physical powers, it also renders more active and acute the intellectual faculties, thus enabling the pupil to acquire with greater readiness, and to use more advantageously, the literary education which should go hand in hand with the manual.

The question of incorporating manual training into the public school system of the country has for years deeply interested educators; but there have been great practical difficulties to overcome in demonstrating the best way of accomplishing the work on a scale commensurate with its importance.

The need of manual training as a developing power is scarcely less than that of industrial education—such education as shall best enable men and women to earn their own living by applied knowledge and the skillful use of their hands in the various productive industries. Accordingly, the Institute seeks to provide facilities by which those wishing to engage in mechanical or artistic pursuits may acquire a thorough theoretic and practical knowledge thereof, or may perfect themselves in that occupation in which they are already engaged.

The twofold aim of the Institute is based on an appreciation of the dignity as well as the value of intelligent handicraft and skilled manual labor. It endeavors to give opportunities for complete and harmonious education, seeking at the same time to establish a system of instruction whereby habits of thrift may be inculcated, to develop those qualities which produce a spirit of self-reliance, and to teach that personal character is of greater consequence than material productions.

It offers its advantages to those only who purpose to do their own part earnestly and well. Its aim is to aid those who are willing to aid themselves. Its classes, workshops, library, reading-room and museum are for this purpose, and while tuition is required, yet it will be the endeavor to make possible by some means consistent with self-helpfulness and self-respect the admission of every worthy applicant.

THE INSTITUTE BUILDINGS.

The buildings of the Pratt Institute in Brooklyn contain from three to four acres of floor space, and vary in height from one to six stories. They are located on a plot of land situated between Ryerson Street and Grand Avenue and between De Kalb and Willoughby Avenues, the main building fronting on Ryerson Street, and the buildings for the department of mechanic arts fronting on Grand Avenue. Across Ryerson Street, opposite the main building, is a plot of ground, 350 × 200 feet, extending through the block to St. James' Place, the plot serving at present

as a playground for the young ladies connected with the Institute. Across Grand Avenue, opposite the department of mechanic arts, is a plot 250 × 200 feet which serves as a playground for the boys.

The main building of the Institute is a brick and terra cotta structure six stories high, 100 feet wide, 50 feet in depth, with an L 87 × 50 feet upon one side. In the rear of the Institute proper is the department of mechanic arts, covering an area of 247 × 95 feet, these buildings varying from one to three stories in height.

The buildings are provided with all the modern appliances for lighting, heating, and ventilation, the prevention of fire, etc. In the main building is a large elevator running from the basement to the tower above, adapted for both passenger and freight service. The buildings are lighted throughout by a complete system of incandescent and arc lamps, rendering evening work in the various classrooms and shops as practicable as that of the day. The buildings—as will be seen by reference to the engravings—are not wanting in external beauty, while they are constructed in the most substantial manner, being practically fireproof, and as strong as would be required for the heaviest kind of manufacturing.

Land for the buildings was purchased in 1884. Contracts were made in the early part of 1885; the work of excavating began about July 1 of that year, and the construction was continued through 1886-7. May 19, 1887, the charter was granted with power to confer degrees.

The work of the Institute is divided into departments, with a faculty organization, and the best talent obtainable will be placed in charge of each department.

It should be remembered that the Institute has but just begun the work which it hopes to accomplish. The comprehensive nature of its buildings and appliances; the complimentary notices of the press, the patronage in so short a time of its more than one thousand students, should mislead no one into expecting more than can in the nature of things be realized. Many departments of perhaps equal importance with those already in progress have not been attempted; some of those now in operation are by no means complete. A beginning has been made, and, as is believed, in such a direction, that a natural and constant growth may reasonably be expected.

THE RESOURCES OF THE INSTITUTE.

The Institute will accommodate several thousand students, who will be charged for the privileges of the institution, but the amount is very low, and all the revenues are to be devoted to the support of the Institute. In addition to this source of revenue, Mr. Pratt has built in Greenpoint, L. I., an apartment building known as the "Astral," the rental of which goes to the support of the Institute. This building cost about \$400,000. It is one of the most complete and perfectly arranged apartment houses ever constructed. We doubt the existence of its equal. It is a little city of itself, with every modern appliance for the comfort of its inmates. Still, the rentals are easily within the means of mechanics and laboring men. These apartments, we are informed, are to be deeded to the Pratt Institute.

Part of the basement of the main building of the Institute will be utilized for a lunch room. Upon the first floor of the main building are the library and reading room. A portion of the second floor is set apart for the general offices of the Institute, the remainder being arranged as a lecture hall, in which lectures upon various subjects are to be delivered from time to time.

DEPARTMENTS OF INTEREST TO THE GENERAL PUBLIC.

In addition to the facilities for technical education, which are designed exclusively for scholars, there are three features of interest to the general public: a free library containing several thousand books, to which additions are con-

stantly being made; a free reading room provided with about 150 of the best American and foreign periodicals, and furnished with a library of reference books, such as encyclopedias, dictionaries, and other books often needed for consultation; and a technical museum containing specimens of manufactured articles, together with the crude materials from which they were made, the specimens being arranged to show the various processes through which the materials pass from their original state to the finished product.

THE LIBRARY AND READING-ROOM.

It was at first intended to establish a library solely for the use of members of the Institute, a library devoted chiefly or entirely to mechanical, scientific and art works; but its scope has been enlarged in order to make its influence as far-reaching as possible. In pursuance of this idea the library is general in character, and while those departments most intimately related to the work of the Institute may be especially strong, yet others will be found abundantly supplied with standard works.

The entire first floor of the main building is devoted to the library and reading-room. At the right of the entrance, occupying a room 47 + 45 ft., and with shelf capacity for 25,000 or 30,000 volumes, is the library, while at the left is the reading-room, 80 × 45 ft.

The reading-room was opened to the public on the evening of January 4, 1888, and at that time contained about 150 of the best American and English periodicals—scientific, mechanical, religious, literary and general. A portion of the reading-room is set apart for a reference department, and here are placed the books most often needed for consultation—the dictionaries, cyclopedias, and general reference books.

At the time of opening the reading-room, applications for the use of the library were first received, though no books were issued to the public till February 1. At this latter date there were on the shelves ready for circulation about 10,000 volumes, and nearly 2,000 more in preparation. The books have been selected with great care so as to fairly represent all the general classes of literature, and have been classified by the decimal system in the following groups: General Works; Philosophy; Religion; Sociology; Philology; Science; Useful Arts; Fine Arts; Literature; History, Travels, and Biography. There have been prepared for the use of the librarians a full, official card catalogue, and for the public a briefer card catalogue, also type-written class lists in binders.

From the first there has been a constant demand for application blanks, and within the first four months over 2,500 members enrolled themselves. During February 3,708 books were circulated, an average of 155 per day; in March the total circulation was 7,206, a daily average of 277; and in April the circulation reached 7,408, or a daily average of 296.

The use of the library and reading room is limited to residents of Brooklyn over 14 years of age, who have filled out the prescribed blank, obtaining thereto the signature of some responsible person as guarantor. The blanks are kept on file one week, at the end of which time, if they are approved, membership cards are issued, which applicants can obtain by signing the register.

Additions will be made continually to all departments of the library that they may always contain the standard works of the best authors, ancient and modern, and special efforts will be put forth to make both library and reading-room helpful to scholars, teachers, and all others who desire to improve themselves through the medium of the best literature.

STATISTICS OF LIBRARY AND READING ROOM, OCTOBER 26, 1888.

Miss Madge Healy, Librarian.

Assisted by—

Miss Eulora Miller,

Miss Agnes E. Little,

Miss L. Atlanta Ramsdell,

Miss Sophia L. Bacon,

Miss Minnie Hawkins,

Miss Happy E. Branch,

Miss Julia C. Sturges.

Number of Librarians and Assistants in charge of Reading Room.....	8
Library Membership.....	4,300
Weekly Circulation (volumes)	2,000

THE TECHNICAL MUSEUM.

The object in establishing the museum has been to collect the best obtainable specimens of handicraft, placing side by side with them the crude materials from which they were fashioned, and to show the processes through which the various articles passed from their original state to the finished product. The museum also serves to furnish specimens, not only of beauty, but of practical utility for training the eye in the principles of form, design, color and ornamentation.

The fifth floor of the main building is set apart for the technical museum. The museum hall proper is provided with rows of substantial oak cases of two classes, vertical and horizontal, all the cases being provided with air tight plate glass doors. In these cases are arranged various wares in different states of completion; some of the finest specimens of glassware, ceramics, bronzes, iron and brass work to be obtained in Europe are shown in these cases.

THE COLLECTION OF CERAMICS, GLASS, AND MOSAICS.

The collection of specimens was begun in Europe in the summer of 1887. At the present time (1888) the museum contains about 4,000 specimens, being most complete in the department of ceramics. There are specimens of the raw materials used in the manufacture of earthenware, fayence and porcelain, with various samples from the celebrated manufactories of Berlin, Dresden, Vienna, Sèvres, Limoges, Worcester, Derby, and from the Staffordshire potteries of Wedgwood, Minton, Copeland, Doulton, etc. Switzerland, Sweden, Denmark, Russia and Italy are also represented, the last country by many fine pieces of fayence from Nove, Milan, Bologna, Pesaro, Rome and Naples.

In antique pottery are specimens of Græco-Etruscan, of Flemish stoneware, of German and Roman earthenware, and also of pottery from the mounds of the Mississippi Valley, with some pieces of modern clay-work by the Indians of Mexico.

Glass may be seen—blown, cut, engraved, etched, enameled, and ornamented in many colors, from the works in Austria, Bohemia, Germany and France, as well as many pieces of the beautiful cameo glass of the Messrs. Webb, at Stourbridge, England. Venetian glass is shown in a great variety of modern and mediæval designs, rich in color and unique in form.

There are also specimens of Roman, Florentine and Venetian mosaic work from the laboratory of Dr. A. Salviati.

ENAMELS AND METAL WORK.

The enamel work of various countries is well represented, a set of medals from Germany, showing the work at different stages, being especially instructive as to the method of manufacture. Copper, iron, tin, zinc, and other metals and their

alloys, are seen in solid, fligree, inlaid, engraved and repoussé work, together with a few choice pieces of Venetian, French, Russian and American bronze.

A large number of ores are used to show the material from which the metals have been derived, and these are placed in close proximity to the artistic and skillfully worked metal.

A part of the collection consists of many species of minerals and of a large number of crystal models in wood and glass so arranged as to give an insight into the science of mineralogy.

The celebrated diamonds and other gems of the world are represented by handsomely cut fac-similes.

A series of rocks, arranged according to Rosenbusch, contains about six hundred European specimens, and near these are placed the same number of specimens from American localities.

At present the collection is by no means complete. Only a detached link has been laid here and there; but it is hoped that in time this plan will be so far perfected as to clearly show what products may be brought out of the earth by intelligence, labor and skill.

LECTURES.

An important feature of the Institute will be its lecture courses. It is intended that these shall bear directly upon the work of the Institute in all its phases, and shall thus include practical instruction upon those matters which pertain to right modes of living, the problems of political and social life, domestic economy, sanitary science, literary culture, ethics, etc. While many of these courses may be given as part of the regular work of the Institute to pupils only, yet many others will be so arranged as to meet the wants of those not otherwise connected with the Institute, but who wish the opportunity to obtain systematic instruction upon subjects of interest and importance.

THE EDUCATIONAL DEPARTMENTS.

Instruction in Drawing was the first given on the opening of the school and the account of the various educational classes begins naturally with that of this department presided over by Mr. Perry.

The importance of Drawing, and its essential relation to all forms of artistic and industrial production, is thus tersely and admirably stated in the following opening sentences of the account of this Department:

THE SCHOOL OF ART AND DESIGN.

DRAWING is fundamental; it is the basis of all the constructive industries, all pictorial art and decorative design. It is the language by which a true idea of the form, the appearance, and the decoration of an object is conveyed from one person to another. It is the one universal language, and its importance to the designer and artisan is only comparable with reading and writing. Its applications are various and almost innumerable; but the subject, considered as a whole, may be regarded as embracing three divisions, which include all the constructive, representative, and decorative arts, namely:

CONSTRUCTION.—Drawing as applied in industrial construction and the making of objects.

REPRESENTATION.—Drawing as applied in representing the appearance of objects and of nature.

DECORATION.—Drawing as applied in ornamentation.

The purpose of this department is to give thorough and systematic training in each of these divisions, which may be specialized under the heads of Freehand, Mechanical and Architectural Drawing, Color, Clay-modeling, Design, Wood-carving, etc.

ORGANIZATION OF CLASSES.

Names for the first class were enrolled October 12, 1887, and a class numbering 12 began work October 17. Additions were made from time to time up to the end of the term, December 24, when the class numbered 36. New classes were formed January 4, February 20 and April 23, the whole number of pupils enrolled reaching 133. On January 4, 1888, the heating and lighting apparatus being completed, evening classes were organized and rapidly filled. Applicants were again admitted March 5, making the whole enrollment for evening classes 174; a total of 307 for day and evening classes.

The entire fourth floor of the main building and the art hall of the sixth floor are occupied by the school of art and design. A great deal of attention has been given to the arrangement of the various rooms of this department, and to the selection of examples for drawing, casts and photographs in large numbers having been purchased in Europe for the use of the students. Every facility is provided for thorough and systematic work, and pupils may here pursue regular courses in drawing and painting, design, clay modeling, wood carving, architectural and mechanical drawing. In connection with the courses, lectures are given on architecture, historic ornament, perspective, design, theory of color, mythology, and artistic anatomy.

Upon the sixth floor of the main building is the art hall, provided with a large skylight. It is used for advanced free hand drawing and painting, and for the exhibition of art collections.

COURSES OF STUDY.

Each course of study is divided into three grades, ten acceptable studies or drawings being required in each. Grade A of the general course in freehand drawing is as follows:

1. Blocking in from casts, several drawings.
2. Appearance of cylindrical and rectangular objects.
3. Group of objects.
4. Corner of a room, building or miscellaneous group.
- 5, 6, 7. Studies in light and shade from casts and still-life.
8. Harmony of color.
9. Historic ornament.
10. Principles of ornament and applied design.

Grade B includes work in design, blocking in and shading the head and figure from casts, drawings of drapery, and studies in color from still-life.

Grade C will embrace advanced work from the antique, painting, and studies from life.

Thorough knowledge of freehand drawing will be insisted upon before pupils will be admitted to advanced classes, as it is absolutely indispensable to good work. Students will not be allowed to omit any part of a course of study unless they can pass satisfactory examinations. Upon completing Grade A of the general course, those showing special ability in any direction will be advised as to their future work.

The special courses in Design, Architectural and Mechanical Drawing are graded in a way similar to that of the general art course, and pupils may enter any of these according to individual ability or fitness.

All students must attend lectures on Perspective, Historic Ornament, Harmony of Color, Design, etc., according to course of study, and must take full notes.

Applicants must give evidence of a certain amount of ability in the line of work they wish to pursue in order to gain admittance to the school, and must pass an examination upon the work of one grade before entering another.

Particular attention will be given to instruction in sculpture and wood carving, with special reference to the development of a high class of art work in bronze, copper, and stone. This department will be instituted for the purpose of encouraging ladies desiring to become proficient in these branches of art.

DAY CLASSES.

Classes for instruction and practice in a general course of light and shade, color drawing, architectural and mechanical drawing, design, clay modeling and wood carving, will be organized September 18. There will be two divisions, the first division meeting five mornings each week, and the second division three mornings, or three afternoons, as the size of the classes may determine.

Tuition.

First division classes \$8.00 a term.

Second division classes 6.00 a term.

Pupils entering the first division classes must attend the five half days.

Afternoon classes in freehand drawing, for teachers and pupils of public and private schools, will be organized October 11, to continue until December 20.

There will be two lessons per week, on Monday and Thursday, from 3:30 to 5 p. m. Tuition, \$4.00.

EVENING CLASSES.

The rooms are admirably arranged for evening work, and, being lighted by electricity, students can work with as much comfort in the evening as during the day.

The freehand, architectural and mechanical drawing is of the most practical and systematic character, showing a constant growth and development in the three fundamental divisions of drawing. The evening classes are intended to meet the needs of a large class of people, who, although employed during the day, yet desire to gain a thorough knowledge of drawing, realizing that it lies at the foundation of industrial pursuits.

Regular and prompt attendance and serious application are required on the part of every pupil attending day or evening classes.

Evening classes will be organized October 1 and January 2, and will meet for instruction and practice three evenings each week. A regular course covering three months will be pursued, and students must satisfactorily complete this course in order to enter the advanced classes.

Tuition, \$5.00 a term of three months.

FUTURE DEVELOPMENT.

The design of the school is to make each course of study so thorough that pupils of aptitude and perseverance, who successfully complete the work of any department, may possess such information in theory and practice as may be made of practical use. To this end normal classes for those wishing to study drawing with the idea of becoming teachers, classes in clay-modeling, wood-carving, etc., will be organized as applications are received, and each of the other courses in both the day and evening classes will be developed to the fullest possible extent.

SCHOOL OF ART AND DESIGN.

LIST OF TEACHERS AND STATISTICS OF ATTENDANCE OCTOBER 26, 1888.

Principal.—Mr. Walter S. Perry.*Assistant Teachers.*—Mr. C. Frank Edminster.

Mr. Henry E. Donnell.

Mr. John Ph. Voelker.

Miss Lucy A. Fitch.

Miss M. A. Hurlbut.

Miss Florence Walker.

Miss Harriette Bowdom.

No. of teachers 8

No. of pupils 357

As the various divisions and classes of the Womens "Department of Domestic Science," occupy rooms in the Main Building, in which the Library, Museum and Schools of Art, just described are placed, the account of these features of the Institute, will precede that of the schools included in the Department of Mechanic Arts, which occupy a separate building.

THE DEPARTMENT OF DOMESTIC SCIENCE.

The aim of this department is to afford women a thorough training in those branches of science and art which pertain to good house-keeping and home-making; to teach, in a practical and at the same time ideal way, those useful and ornamental arts which, as the charter declares, "have reference to matters of household economy and home management, the preparation of clothing, useful and ornamental, of economic and wholesome foods; and to give such instruction in sanitary laws and the laws of hygiene as shall tend to secure comfortable and healthy homes at the least expense, and also a careful regard for bodily health."

It is also the purpose of this department to train those who desire to support themselves by these branches of industry, and to educate women to become skillful in whatever branch of industry they choose, be it house-keeping, cooking, sewing, dress-making or millinery.

COOKING.

The Cooking-School was opened January 20, 1888, with a class of twenty ladies. Other classes were organized as follows: January 21, a class of twenty school-girls, meeting Saturday mornings; Monday evening, January 23, a class of twenty-one; Monday afternoon, February 13, a class of twenty-two, and Wednesday evening, February 29, a class of twenty-four. March 30, the first three classes were re-organized with twenty-five pupils in each, and began the second course. A course consists of twelve lessons, one lesson of two hours' duration being given weekly. One hundred and eight pupils have been connected with the cooking-school since January 20. Many applicants have been unable to gain admission, but in the future there will be accommodations for a much larger number of pupils.

The evening classes are reserved for self-supporting women, the day classes are open to all.

The rooms of the cooking-school are on the sixth floor of the main building. They are excellently ventilated by large sky-lights with numerous swinging sashes in the roof, besides window-sash and side-wall ventilators. In the centre under the sky-light are two large cooking-tables, twelve feet long by four feet wide. Each is furnished with ten gas burners for cooking, and ten drawers with shelves below.

Every drawer and set of shelves is supplied with a complete assortment of cooking utensils, so that twenty people can work at the same time. All the appointments of a well-ordered kitchen are here found, such as hot and cold water, galvanized iron sinks, range, stove, closets, dressers, refrigerator, etc.

There are three courses in cooking, of twelve lessons each, advancing regularly from the simplest to the more elaborate dishes. Every pupil is required to give evidence of her thorough acquaintance with the elementary before passing to the higher course. A practical application of the principles taught is insured, since each pupil works out with her own hands the receipts given her. The instruction comprises lessons on the building and care of a fire, proper modes of measuring liquids and solids, of boiling meats, eggs and vegetables, broiling and roasting meats, of making soup, puddings, and, most important of all, bread; in short, the principles and practice of good, plain, wholesome cooking. Every pupil is urged to try all the dishes at home, and a record is kept of the number thus made.

In connection with every lesson a brief lecture or explanation is given by the instructor upon the chemical and nutritive properties of the materials used, the changes produced by cooking, etc.; and when a pupil has completed a full course of thirty-six lessons, it is expected that she will not only be able to prepare all varieties of wholesome and appetizing food, but will also have a good understanding of the properties of the various food materials, their values as nutritive agents, the chemical changes involved in the processes of preparation, and other matters necessary to thorough and intelligent work.

In front of the cooking-rooms is the lunch-room, where a simple meal, well served, is furnished at noon and at evening for a small sum. This is intended primarily for the use of the teachers and students connected with the Institute.

Communicating with the lunch room is a well equipped kitchen where the meals will be prepared for the lunch room on this floor and also for the large lunch room soon to be placed in the basement of the main building.

TUITION FEES.

Day classes, \$3.50 each for first and second courses, and \$5 for third course.

Evening classes, \$1.50 each for first and second courses, and \$3 for third course.

In the cooking classes materials are supplied to pupils free of charge.

INSTRUCTION IN SEWING.

The third floor of the main building is devoted to sewing, dressmaking, millinery, and art embroidery.

The Sewing Class opened Thursday afternoon, February 23, 1888. Twenty-four pupils were present at the first lesson, and at the second twelve more entered, enlarging the class to such an extent that it was necessary to divide it. An evening class began work March 9, and a class for school-children was opened Saturday morning, April 7.

The large room on the south side of the third floor of the main building is used for the sewing classes.

The instruction comprises all kinds of hand-sewing, from simple overhanding to button-holes, hem-stitching, feather-stitching, and instruction in machine-sewing. Cutting and making plain garments from pattern is also taught after pupils have acquired a knowledge of hand-sewing.

Tuition (for course of twenty-four lessons.)

Day classes	\$4.00
Evening classes	2.00
Day classes for children	2.50

INSTRUCTION IN MILLINERY.

Two classes were organized April 19, and a third April 25, for instruction in millinery. In these, as in all other classes, the principles taught will be practically applied, each pupil may trim during the course an entire hat or bonnet, in which good taste and good workmanship shall be combined.

The course of twelve lessons includes instruction in covering, facing, and trimming hats and bonnets.

Tuition.

Day classes	\$4.00
Evening classes	2.00

INSTRUCTION IN ART EMBROIDERY.

Courses consist of twelve lessons. All applicants for admission are advised to complete a short course in drawing and color as indispensable to good work. A knowledge of hand-sewing is required for entrance, since a pupil must first learn to use the needle in elementary work before taking up the complex art of embroidery. It is desired to train women who shall be able to originate good designs both as to color and form, and not be forced to continually copy the designs of others.

Tuition.

Day class (Wednesday at 3 o'clock)	\$4.00
Evening class (Wednesday at 7:30 o'clock)	2.00

INSTRUCTION IN DRESS-MAKING.

Monday, March 19, 1888, three classes of twelve pupils each began a course of ten lessons in dress-making, each class receiving one lesson of two hours' duration per week. One class meets in the morning, one in the afternoon, and one in the evening. April 10, another class of twelve was formed and began work. Many applicants have been unable to enter, but hereafter a much larger number can be accommodated.

Large tables for drafting, tracing and cutting, comfortable chairs, sewing-machines, blackboard, and closets for storing materials, afford every facility for doing the best work.

A systematic course of dress-making is offered—a knowledge of hand and machine sewing, as well as some experience in making simple garments from pattern, being required for entrance. Each pupil, under the guidance of the teacher, learns to fit, make and drape an entire dress for herself or others from measure during the course.

It will be the aim of the teacher to include in her instructions the principles and ideas of good taste in dress, that it may be not only a dress well fitted, well made, and tastefully draped which the pupil has produced, but also one best suited to her form and coloring, thereby endeavoring to train dress-makers who will have a sense of the value of the true artistic element in dress, combined with thorough workmanship.

The following announcement is for the year 1888-'89.

CLASSES IN DRESSMAKING.

Courses consist of twelve lessons. A knowledge of hand and machine sewing, as well as some experience in making simple garments from pattern, is required for admission to the elementary class in dressmaking. After learning, in this course, to cut and make dresses from pattern, pupils are prepared to enter the advanced course, in which they are taught to draft from measure.

In the classes in Sewing, Dressmaking and Millinery, pupils furnish their own materials.

Tuition Fees.

Elementary day classes.....	\$5.00
Elementary evening classes.....	3.00
Advanced day classes.....	10.00
Advanced evening classes.....	7.00

The latest feature added to the Department of Domestic Science is

INSTRUCTION IN HYGIENE AND HOME NURSING.

The course consists of twelve lectures, with practical demonstrations, on the following subjects: Outlines of anatomy, physiology and hygiene; immediate aid in emergencies—the treatment of wounds, broken bones, sunstroke, cases of poisoning &c.; home nursing, including care of the sick room, administration of foods and medicines, &c., &c.

The number of pupils in each class is limited to fifteen, that all may have opportunity for practical work under the direction of the teacher.

Tuition Fees.

Day class (Wednesday, at 3:30 o'clock).....	\$4.00
Evening class (Monday, at 8 o'clock).....	2.00

DEPARTMENT OF DOMESTIC SCIENCE.

LIST OF INSTRUCTORS AND NUMBER OF PUPILS IN ATTENDANCE OCTOBER 26, 1888.

Principal.—Miss H. S. Sackett.

Assistant Teachers.—Miss Isabel D. Bullard.

Miss Harriette B. Peck.

Miss Effie King.

Miss Eunice Campbell.

Mrs. A. D. Wilson.

No. of Teachers.....	6
No. of pupils.....	457

SHORTHAND DEPARTMENT.

One of the helpful departments of the institution is the school of shorthand and typewriting, located on the third floor. The work done in this department is thorough and practical.

Instruction in shorthand was commenced on the evening of February 10, 1888, with thirty-five pupils. It was deemed advisable, owing to the lateness of the season, to receive but a limited number, and also to confine instruction to evening work, in order to accommodate those regularly employed during the day.

The course embraces a thorough knowledge of the principles of shorthand, so that practice alone is necessary to perfect one in the art. The formation of speed classes has not been attempted, but opportunity for advanced work will be given later.

Although but slight knowledge of English is required in learning shorthand, yet in its application it is so necessary that the practitioner be thoroughly familiar with the spelling and grammar of the language, that hereafter applicants for admission will be required to pass examination in these branches.

The following announcement is made for 1888-'89.

PHONOGRAPHY AND TYPE-WRITING.

Classes meet Monday and Friday evenings of every week.

Tuition Fees.

For Phonographic Course of 24 Lessons..... \$7.00

For Type-Writing..... 3.00

Applicants for admission to this Department must be at least 17 years of age, and must pass a satisfactory examination in English language and spelling.

Four Teachers and 70 pupils are reported in this Department October 26, 1888.

Principal.—N. P. Heffley.

Assistant Teachers.—Miss Anna M. Rushmore.

Miss Katharine I. Harrison.

LECTURE HALL.

Vocal music on the Tonic Sol-fa system. A class will meet on Tuesday evenings, beginning October 23, from 8 till 9:30 o'clock, for the study of sight reading, voice and ear training, part singing, and musical theory. No preliminary examination. Applicants must be not less than sixteen years of age. The first or introductory lesson, October 23, 1888, will be free to all who may choose to attend.

Tuition, for course of twenty lessons, \$3.00.

The other grand division of the Institute is now to be considered. This is

THE DEPARTMENT OF MECHANIC ARTS.

In the rear of the main Institute Building and fronting on Grand Avenue is a series of buildings for the Department of Mechanic Arts.

Instruction in this department is designed for three distinct classes of pupils: First. Members of the regular three years' course, who, in connection with their literary work, will be given courses in wood and iron work—joinery, pattern-making, wood-turning, molding, casting, forging, etc. Second. Pupils in other schools who wish to supplement their studies with some kind of manual work. Third. Those who are employed during the day, but wish to join evening classes in order to learn some mechanic trade, or to perfect themselves in the trade in which they are engaged.

The buildings of this department cover a ground space of about 250 x 100 feet, are constructed of brick with blue stone trimmings, and vary from one to four stories in height. A bridge from the third story connects them with the second story of the main building.

BASEMENT.

Boiler Room.—In the basement, on the south side, is the boiler room, containing two boilers of 100-horse power each, which furnish steam for heating the entire group of buildings and supply power for the engines, elevators, electric lights, fire-pump, etc. A system of fire service, mains and hydrants, used in connection with the fire-pump, is placed throughout the buildings as a protection against fire.

Engine-Room.—In the engine-room adjoining is a Harris-Corliss' engine of 40-horse power to operate the machinery of the shops, and an Armington & Sims high-speed engine, which drives an Edison dynamo which has a capacity of 500 sixteen-candle power incandescent lamps for supplying the incandescent lamps in the main building. An 800 light Sawyer-Man dynamo and an arc machine of the Western Electric Co.'s system supply the shops and trade school buildings with light. Both of these machines are driven by a 125 H. P. engine from the N. Y. Safety Steam Power Co.

The engines, the generation of steam and electricity, and their connections with the buildings, have been so arranged as to offer a means of instruction to the pupils. The remainder of the basement is used for storage, etc.

FIRST FLOOR—FORGE.

On the south side of the first floor of these buildings is the forge room, 73 x 29 ft. and 18 ft. high, provided with ventilating skylights. The room is planned to accommodate thirty-six pupils, and forges, anvils, etc., will be provided for that number. A system of pipes furnishes blast to the forges, and an exhaust fan serves to carry away fumes and smoke. In this department the forging of tools and various kinds of iron work, including art forgings, is carried on.

FOUNDRY.

Adjoining the Forge room on the north is the foundry, 66 x 29 ft., with an 18-foot ceiling. Two large skylights are built in the roof, giving good light and abundant ventilation. The foundry equipment includes a 20-inch iron melting cupola, two brass furnaces, a white metal gas furnace, and core oven. Practice is given in green sand, dry sand, and loam moulding, and in core making. Swept-up work is illustrated, and particular attention given to the production of art casting in iron and bronze. In the rear of the forge, foundry, and engine-rooms are large accommodations for lockers, wash-rooms, store-rooms, etc.

METAL-WORKING DEPARTMENT.

At the north end of the first floor is a room 92 x 37 ft., designed for metal-working. It is fitted with sufficient bench room for forty-eight vises, also a number of engine and drilling lathes for iron work, and a complete set of standard typical machines is contemplated.

WOOD-WORKING DEPARTMENT.

The main wood-working room, at the north end of the second floor, is 92 x 37 ft., and is furnished with about 150 feet of wall bench, and thirty-six single benches, supplied with the latest and most improved tools. It contains a number of wood-turning lathes, a large pattern-maker's lathe, buzz-planer, surfacer, etc. The only instruction given as yet has been to a class of twenty-four boys who commenced work in March.

The lumber and tool rooms are adjacent to this room and are abundantly large for all requirements.

The third floor of this building is devoted to laboratories and class rooms, and the fourth to advanced art work in metals, engravings, etc. This last department is not yet organized.

DEPARTMENT OF MECHANIC ARTS.

LIST OF INSTRUCTORS AND NUMBER OF PUPILS IN ATTENDANCE OCTOBER 26, 1888.

Principal.—Mr. C. R. Richards.

Assistant Instructors.—Mr. W. E. Drake.

Mr. T. C. Coleman.

Mr. R. W. Bentley.

No. of Teachers.....	4
No. of pupils.....	82

REGULAR COURSES.

THREE YEARS' COURSE FOR BOYS.

Although much of the work of the Institute is designed to be supplemental to that of other institutions, yet it has been thought wise to establish, for boys, a full three years' course, to include freehand and mechanical drawing, and shop-practice, at the same time giving opportunity for the studies of a thorough English education.

In outline, the course is as follows: An average of one hour per day of freehand and mechanical drawing, two hours of shop-practice—tool and machine work in wood and metals—and three hours daily in the class-room, to be devoted to mathematics—algebra, geometry and trigonometry; science—physiology, physics, chemistry, etc.; English—history, literature, political science, etc.

Applicants for admission to this course are required to pass examination in arithmetic (entire), geography, United States history, grammar and composition. Examinations, extending over two days, will be held on Saturday and Monday, June 16 and 18, and on Wednesday and Thursday, September 12 and 13.

Tuition Fees.

First year.....	\$10.00 per term, or \$30.00 per year.
Second year	15.00 per term, or 45.00 per year.
Third year.....	20.00 per term, or 60.00 per year.

THREE YEARS' COURSE FOR GIRLS.

A course similar to the above, but especially adapted to girls, will be established. The class-room work will be the same. In drawing, particular attention will be given to freehand work, designing and modeling; and for shop-work will be substituted cooking, sewing, dress-making, etc.

LIST OF INSTRUCTORS AND NUMBER OF PUPILS IN ATTENDANCE OCTOBER 26, 1888.

Principal.—Mr. W. O. Pratt.

Assistant Teachers.—Mrs. M. E. Vandercook.

Mr. Chas. V. Kerr.

Dr. G. R. Butler.

No. of Teachers	4
No. of pupils.....	42

DEPARTMENT OF BUILDING TRADES.

North of the Mechanic Arts Building is a building designed for the Department of Building Trades. It is 103 x 95 ft., and is built with a clear story, the ceiling being about thirty feet high.

The work in this department was commenced February 20, 1888, with pupils in bricklaying, modeling, stone-carving and plumbing. Instruction is given three evenings of each week, from 7.30 to 9.30 o'clock.

Bricklaying.—In bricklaying, pupils are first taught to handle the trowel and spread mortar properly. They are then put to work upon eight-inch walls until they can carry the corners up plumb, and lay the courses level. Particular care is taken that the joints shall be thoroughly struck and pointed. When the student can do this neatly and well he is taught the construction of arches, etc.

Stone-carving.—In stone-carving, pupils are drilled upon working out forms illustrating the different styles of ornament in architecture. All are required to sketch designs and model them in clay before cutting them in stone. This course is followed in order to develop any talent which a pupil may have, and in order to produce carvers whose work shall be original and artistic.

Plumbing.—In the plumbing section, benches completely equipped with tools have been provided for fifty-four pupils. The course of study includes the making of lead seams, all kinds of wiped joints and sand bends, drill in the working of sheet lead, in the erection of sewer pipes, etc. Special attention will be given to the sanitary aspects of plumbing, and the course of instruction will be such as to insure an understanding, on the student's part, of the scientific principles of drainage, sewerage and ventilation, together with ability to make the practical application of the same in the most thorough manner.

TRADE SCHOOL STATISTICS.

LIST OF TEACHERS. OCTOBER 26TH, 1888.

Principal.—Mr. R. T. Heath.*Assistant Teachers*.—J. McCauley,

T. Thatcher,

T. H. Radcliff,

W. H. Hutchison.

Engineer.—Mr. John Forster.

No. of Teachers..... 5

No. of pupils 64

The following statements are from the Preliminary announcement for 1888-9, in the circular of the Institute.

The school year for day classes is divided into three terms: First term, September 18 to December 21; second term, January 2 to March 27; third term, April 2 to June 21.

For evening classes: First term, October 1 to December 21; second term, January 2 to March 27.

GENERAL REMARKS.

The authorities of the Institute reserve to themselves the right to increase the rates of tuition, if it shall be found advisable, but efforts will be made to render possible by some means consistent with self-helpfulness and self-respect the admission of every worthy applicant.

Application blanks for any of the courses, and all necessary information, may be obtained upon application, by letter or in person, at the office of the Institute, Ryerson Street, between DeKalb and Willoughby Avenues.

Office hours.—Daily, except Saturday, 9 a. m. to 5 p. m.; Saturdays, 9 a. m. to 12 m.; evenings, Mondays, Wednesdays and Fridays, 7 p. m. to 9 p. m.

Please address all communications to F. B. Pratt, Secretary.

With the foregoing announcement of plans for the then coming school year, 1888-1889, the account of the Pratt Institute, as it was prepared for the present volume of this Report ended. It is here retained because it shows both the comprehensive plans of the lamented Founder, and demonstrates the immediate success in attracting students to all the several departments of the Institute, which was so noticeable a feature of its opening; proving, as nothing else could have done, the existence of a wide spread public need for such varied educational facilities as were here offered, and amply justifying the wisdom of Mr. Pratt, in devising the Institution, and the methods he had adopted for the carrying out of his benevolent educational plans for promoting the welfare of the Community.

The delay in issuing this volume, caused by the preparation and publication of Part II. of this Report, necessitates continuing the histories of the several institutions to the present time.

I can not more readily show the present condition of the Pratt Institute with its immediate and prospective activities, or better link this account of these opening experiments with those of the years

that have since passed, than by commencing with the following letter, written by Mr. Perry, principal of the Art Department, in reply to a letter asking for the publications, and other information requisite to enable me to compile the further account of the Institute.

PRATT INSTITUTE,

Brooklyn. N. Y., Dec. 15, 1891.

Col. I. EDWARDS CLARKE,

(Care of Commissioner of Education.)

Dept. of Interior, Washington, D. C.

DEAR MR. CLARKE: Your letter of Dec. 8th received in due time. I spoke with Mr. F. B. Pratt of its receipt and it has been read by him. He thought he had sent you all reports, papers, etc. that had been published. I will, however, send at once three of the catalogues which were issued last summer, which will give full statements regarding our courses of study. I will also send the "Record" containing the address of Mr. Charles Pratt of a year ago, together with the reports from the different departments. This address, while not the last delivered before the students, was the last spoken by him to the Institute as a whole, and I would like to have you note in particular, the last two or three paragraphs as singularly prophetic of the end that was so soon to come. These words we have framed underneath his picture, and they hang where every student, at least of the Art Department, can always see and read them. The Record of this year will contain Mr. C. M. Pratt's address on October 2nd, the first founder's day after the death of his father. It will also contain reports from the different departments, and the financial statement regarding the endowment, and expenses of the Institution. This is the first financial statement ever made in connection with the Institute, and you will see that there is an endowment fund of two million dollars, and about one million and a-half of property besides. The incidental statements in regard to the cost of the Institute, etc., I will leave for you to gather from the report. These reports will be issued very soon, probably by the first of the new year. Of course we are getting out circulars all the time, but they are circulars that concern the formation of new classes. It seems to me that the catalogue and the "Record" will contain the information that you wish, without being burdened with all these miscellaneous circulars, the substance of which are included in the catalogue.

There are at present about 3000 students in the Institute, and in the Art Department, morning, afternoon, and evening classes, we have over 700 students, many of whom come from a distance. In the morning class there are 20 States represented, and over 100 students boarding in the city.

The death of Mr. Pratt was a very great loss to the Institute. He had in mind the carrying out of a great many plans which he often used to talk over with me. Perhaps I knew as well as anyone outside of the family, what he proposed to do in the future; but the sons say that so far as possible, they shall carry out every known wish of their father, and certainly they are making every effort to do so. Of course the death of a person binds the property so it cannot be used in just the way that it might be used if the person leaving the same could have lived longer.

A new building is being constructed for our technical High School, or as called in many places our Manual Training School. We do not use the word "manual" training, because we feel that the word manual is an unfortunate term which has been adapted to schools of this kind, and so many people feel that manual training means simply hand and mechanical training; but the subject is far broader than that.

Another large new building will be completed in the immediate future, in fact as soon as the plans can be perfected. This building will contain the magnificent

circulating library, a museum, and a lecture hall, and in all probability a fine series of class rooms and studios for the Art Department, which at present is located in the Main Building. The idea is to make the art school, the art museum, and the art reference room of the library three features in one. The museum and the library being very important elements in the education of the art student.

CO-OPERATIVE WORK UNDERTAKEN BY THE INSTITUTE.

Mr. Pratt's sons have also recently made arrangements with the National Committee of the Y. M. C. A. to place a national secretary in the field, whose duty shall be to look after the educational work, and perfect the work so far as is possible throughout the country. This man is to be supported entirely, expenses and salary, etc. are paid by the Messrs Pratt, and he will look for directions for his work to the Pratt Institute. This seems to me a most important matter. They have also recently given to the town of Glen Cove on Long Island, where Mr. Pratt had recently purchased a farm, a sum of \$25000 to be placed with the sum of \$35000 to be raised by the town, in order to found an Industrial School there for the school children of that place. An announcement was made of this in one of the editorial columns of the New York School Journal of last week or week before.

I have also sent you a copy of a circular, stating a co-operative movement between Pratt Institute and the Prang Educational Co. This is a matter arranged by Mr. Pratt before his death and it is a matter entirely his own. Some way or other he wished to reach the masses—the school children and the teachers of the country. He knew Mr. Prang well, and that Mr. Prang's business was more than a commercial business, for unknown to most people he is a philanthropist, and has put immense sums of money into the matter of education for the good of the children. Mr. Pratt has taken his way of being good, and Mr. Prang has taken his way, and Mr. Pratt recognizing Mr. Prang's work co-operated with him.

This is something in which Mr. Pratt was very greatly interested, so much so that it was the first work taken up by his sons after his death, as you will see by the "Record" which I send you containing Mr. C. M. Pratt's Address on founder's day.

I think I have given you all the information which you asked. If not kindly let me know.

Yours truly

WALTER S. PERRY.

The following is the address of Mr. Pratt as published by the Institute,* to which reference is made by Mr. Perry

FOUNDER'S ADDRESS, OCTOBER 2, 1890.

The past year has gone rapidly, and my address, and the announcement and catalogue of last year have become a part of the history of Pratt Institute. This morning I propose to add another page to that history.

OUR FIRST CATALOGUE.

In preparing a systematized report of the work of almost any other educational institution, it would be quite easy to find a model for guidance; but in this case the work in the various departments has been carried on in great part according to original plans and methods, and it is for this reason chiefly that I desire to emphasize the value of the work done, and to call your special attention to the carefully classified information given in the announcement and catalogue issued last June, in which the design and methods of instruction in each department and branch of study in the Institute are set forth.

*Pratt Institute Record, Founder's Day Number, October 1890, No. 2. Published by Pratt Institute, Brooklyn, N. Y. Pp. 56.

TECHNICAL HIGH SCHOOL.

The first class of nine from this department was graduated at the Commencement, on the 19th of June last, which was an occasion of great interest, not only to the students of the Institute, but also to its patrons, and to many of the citizens of Brooklyn. The Rev. Dr. Cuyler delivered an impressive address and the exercises were highly creditable to both teachers and scholars. We regard this department as one of importance, and one that will be of signal service to all who may avail themselves of its opportunities.

The applicants for admission to the class this year were more than we could accommodate. We believe in the value of co-education, and are pleased to note the addition of more than twenty young women to this entering class.

ART DEPARTMENT.

The course in Normal Art was opened two years ago. Last June we graduated a class of twenty-three earnest women, who went out as teachers, and there is great satisfaction in believing that their influence and work will be felt in many cities in different parts of our country. The demand for competent teachers in this department is constant, and we have as yet been unable to satisfy it.

For the branch of clay-modeling we have engaged the services of a competent and experienced person, thoroughly familiar with the art of modeling and sculpture, and we anticipate a marked improvement in stone and marble work under his instruction and management during the year before us.

APPLIED ART.

The work of both teachers and scholars in this direction has been full of interest, and much progress has been made in every branch, particularly in that of designing, wood-carving, and artistic needlework.

Returning from France a few weeks since, I met on the steamer some ladies who had gone to Paris for no other purpose than to buy trousseaus for some of their friends because they could not obtain as fine a quality of needlework in this country. We wish to develop the skill and cultivate the taste of Americans so that they may be able to do as good work here as can be obtained in Paris. Many people are willing to pay high prices for the best quality of work, and, I think, with time and patience, the women trained at this Institute will secure the confidence and patronage of the public for the products of their skill, and at prices that will amply repay them,

Our work in dressmaking and millinery has received high commendation. The specimens sent to the exhibition at the National Teachers' Convention, at St. Paul, called forth much praise, and we feel that we have good reason to compliment the women in charge of this department for the success which has attended their labors.

DEPARTMENT OF DOMESTIC SCIENCE.

One important design of this department is to render it practicable for persons of very limited income to secure and enjoy more comfort in their homes. The man who earns ten dollars per week will have a more attractive and happy home with a wife trained in household economy than the man who receives twice as much whose wife has had no training in domestic economy and thrift. In my opinion, the value of this practical part of a woman's education, in its influence and benefits to any community, cannot be overestimated, and we believe that its importance will be realized more and more by the people generally from year to year.

The many applications we have had for teachers in most of the departments of our work have led us to appreciate the need and importance of establishing normal courses in many of the branches. Among these, we have started a Normal Class in Cooking.

We have been anxious to establish a course of training to qualify servants for housework and the management of households, and it is hoped that we shall be able to do something in this line during the coming year.

DEPARTMENT OF MECHANIC ARTS.

Decided progress has been made in organizing and developing this department in its various branches. We have added tinsmithing, and propose also to provide looms for giving instruction in the art of weaving. We do this at the earnest request of manufacturers who desire trained workers in this branch of mechanic art.

The Painters and Decorators' Association visited the Institute last year and urged that we should begin a class in painting and fresco work in connection with our Trade School Department. The necessary facilities for that purpose have been supplied, and evening classes have been formed.

DEPARTMENT OF COMMERCIAL EDUCATION.

This is a comprehensive term. We have found a number of institutions in Europe whose specific aim is to train young men for commercial pursuits. In connection with this work is a demand for first-class clerks who propose to make business their profession.

For lack of room we are not able to carry out all our plans in regard to this department.

Our work in phonography and typewriting has been very successful. Many of the students have secured lucrative employment, and retained their positions.

MUSIC DEPARTMENT.

Finding that we had not room enough in the Institute buildings, owing to the growing needs of this department, it has been transferred to the Studio Building, No. 244 Vanderbilt Avenue. This building, on account of the fire at the Adelphi Academy last December, it was found expedient to surrender to the Academy for the remainder of the school year—they assuming the kindergarten work which we had undertaken. We propose, however, to establish a Normal Class for training kindergarten teachers as soon as we can provide the facilities.

The Choral Society is doing good service in drawing the attention of the people at large to the fact that they may not only enjoy music as listeners, but also take part in its performance.

A two-year course for the training of teachers of music has been established in response to a growing demand for such teachers.

THE LIBRARY.

Probably no department of the Institute has been more successfully carried on than the Library, perhaps because we have not been hampered by any commitments as to the way we should conduct it. We have selected the best books, and only those which would be of real service and benefit. Special lists for the young have been made, and special works on history and various other subjects have been selected with great care. We believe this department has been making its influence widely felt for good. The circulation has steadily increased, having reached nearly 100,000 volumes during the year ending July 1, as against about 90,000 in the year preceding. The number of members, also, has increased from 6,500 to 9,500.

The Astral Branch of the Library, in the Astral Building at Greenpoint, has also been largely patronized, and it has become an important institution in that part of the city.

THRIFT ASSOCIATION.

According to the announcement on last Founder's Day, the Thrift Association of Pratt Institute was formed, and the result of the first year's work is satisfactory. The business has been allowed to develop naturally, and no special efforts have been made to induce people to become investors.

For the first nine months from October to the end of our fiscal year, July 1, we received \$13,373.04. The whole amount has been loaned on mortgages to people desiring to purchase homes.

The number of subscribers was 321. The number of shares subscribed for was 1,575.

A large number of circulars of information, and 10,000 copies of the Sayings of Benjamin Franklin have been distributed to aid in promoting habits of economy and thrift among the young, and we believe this literature has been useful for this purpose.

We have found in our experience that many persons are unable to save as much as \$1 per month, and we have concluded to introduce the stamp system which has been used in Europe and in some parts of this country. For this purpose we have prepared a series of stamps of the denominations of 5, 10, 25, and 50 cents, which are for sale, and can be purchased at any time during the month, and can be returned at any time and redeemed for cash.

Branches of The Thrift have been established in the Young Men's Christian Association, in the Young Women's Christian Association, and in the Astral Reading Room at Greenpoint.

The Loan Branch has also been quite successful; all the money received having been loaned to persons buying homes, and it is being returned monthly. Many people, we believe, are buying homes in this way, who would otherwise be unable to do so. We are hoping to enlarge the usefulness of the Thrift Association as time goes on.

THE FACULTY.

The Faculty of the Institute consists of seven members, each of whom has charge of some special department. The responsibility thus thrown upon each has tended, we believe, to stimulate individual attention to specific rather than general work, has prevented any clashing or interference in the management, and the result has been most gratifying.

INSTRUCTORS.

In addition to the Faculty there are ninety-one instructors and assistants, who, with the Faculty, and with those who are to enter upon the work this year, will make the number considerably over one hundred.

THE TRUSTEES.

There are only three Trustees charged with the control and management of the Institute, and I need not repeat here that there has been great harmony in the discharge of their responsible duties. It is my judgment, both from observation and experience, that on account of this small number, we have made more progress in our work from the unobstructed freedom with which we have thus been able to carry it forward.

NEW BUILDING.

The Institute is sadly in need of room in many of its departments. In our last catalogue, we gave the outlines of a large building which we were proposing to construct, but we thought it wise to modify our plans, and the construction will therefore be somewhat delayed. The architect is preparing plans, and we hope to begin the work of construction at an early day.

SUGGESTIONS FROM PATRONS.

In May we issued a circular to the patrons of the Institute, asking a number of questions, to learn if there was not some way in which we could be of more benefit to the students, and in the hope that we might reach some persons who could suggest particular needs which it might be within our power to supply. The number of replies received up to June 6 was 556, and these replies have given us information of those who, from lack of funds, have been unable to join any of our classes, of others who would be glad to attend summer classes, as well as valuable information upon many other points by means of which we hope to be able to extend the usefulness of the Institute.

LECTURES.

Referring to lectures, we have had only a few during the past year, but propose to have this valuable method of popular instruction fully represented at the Institute as soon as more ample facilities can be provided for that purpose.

DORMITORIES AND BOARD.

Attention has been called to the possible need of dormitories, or a place where teachers and scholars from out of town could obtain board and lodging. We hope to be able to furnish such accommodations as soon as we have time to give the matter proper consideration.

SUMMER SCHOOL.

We have requests from a large number of earnest teachers for opportunities to avail themselves of the facilities of the Institute to fit themselves to become teachers in the various lines of work peculiarly connected with the Institute.

If we could arrange to provide teachers for this purpose we should be glad to supply this important demand. The strain on our regular teachers at the Institute is such that they need the vacation for preparation of the work of the new year. If any would like, however, to take advantage of the classes, should any be formed, and will send in their names, we will be glad to do anything we can to further their interests.

Added as a postscript to the circular of questions, it was suggested that many people who were brought up in the city do not appreciate the advantages coming to those who devote themselves to the cultivation of the soil, and that the grand opportunity offered to American youth in agriculture has not been well understood; hence, this question was also asked:

"In case we could interest farmers or persons connected with agricultural pursuits in offering employment under favorable circumstances, do you know any young man or woman who would like to make farming a profession, or who desires to spend a few weeks or months in healthful work on a farm? The idea would be to try to secure for them employment which would give them general experience, at the same time expecting that the value of their service would be, substantially, an equivalent for their board."

There were seven who referred to the farm work, resulting in four young men from the institute giving their time for a few months last summer on the farm in return for their board. This would seem a small return for the cheerful, patient work they gave, but they receive something worth more than money in learning to work and care for themselves.

In view of this experience, we are considering the advisability of establishing classes in some form of agriculture, such as gardening, flower and tree culture; making use of the vacant ground about the Institute. We are now looking for a competent man to take up this work and make it a part of our development.

I was struck while in Paris this summer with the profusion and beauty of the floral decorations, with the arrangement of bouquets and flowers in the shops, and the number of people who seemed to be occupied in that particular business. People with small plots of ground were raising flowers and bringing them to market.

Now we have an abundance of cheap land in this country, and an ample opportunity for thousands of our young people to lead happy and contented lives in this branch of industry, which, in my estimation, has been very much undervalued. In view of the progress which has been made in the invention of machinery and the absorption of large capital by manufacturing concerns, it seems to me doubly important that we should open to American youth the broad and comprehensive field which is embraced within the range of the garden, tree culture, and agriculture.

OUR WORK.

No record of our work has been so important as the example which we believe it has set in the line of progressive education. We are endeavoring to establish an institution as a pattern for other cities and towns to follow, and we have had many encouraging reports, particularly regarding our exhibition at St. Paul during the past summer; but it requires a long time before a young institution like ours can become widely known.

FINANCES.

I have been asked many times why we did not publish some statement of the finances of the Institute. Each year, as we have come to Founder's Day, I have had accounts made up and a statement prepared at considerable cost of time, which I had thought to make public, and have then put them one side, because I was in doubt as to the wisdom of making any statement.

I have asked myself, over and over again, what good could result from any statement we could make of the amount of money we have spent. The quality and amount of service rendered by the Institute is the only fair estimate of its real value. Our experience has been too limited to justify us in attempting to give any estimate of what it costs to carry on the various branches which we have undertaken.

Demands for money to meet the growing wants of each department of the Institute have been constant, and while the receipts for tuition were six times as large for the year 1889-1890 as they were for 1887-1888, they were not one-quarter as much as the general expenses, such as salaries of teachers, light, heat, supplies and equipment, to say nothing of any interest on the cost of land or of buildings.

But this does not concern us; for the separate departments, when once fully organized, we believe can be made to become largely self-supporting, although the Library will be a constant expense, and can give us no direct return. In a word, we are trying to teach others to be thrifty. We are struggling daily with the problem of our own financial condition. We do not wish to spend a dollar if ninety cents will produce the same result. On the other hand, we want nothing but the best quality of men and women as managers and helpers, we want nothing but the best facilities for our work, and if we should find the burden becoming too heavy, we shall try to so modify our plans as to enable us to go on with the work as we find the altered condition demands.

GENERAL REMARKS.

Handwork.—Just a word, now, before closing, on handwork:

Gobelin tapestry, which was made by the French Government for so many years, and which represents, perhaps, the highest type of hand-weaving, is still in demand. We were this summer in Russia, where they were cutting hard Siberian stones and fitting them into mosaics. This was done with very great skill and with the utmost patience. This is work which our American people would be

glad to buy and pay high prices for if they could get it, but it is done altogether for the government, and so these products of skilled labor are not in the market.

I am satisfied that our American people have yet to learn what a large field of profitable employment lies in the various kinds of artistic handwork. Whether it be needlework, wood-carving, designing, sculpture, or anything which represents the most skillful and patient labor, I am sure that it will find a market when we can produce such a quality as to compete with the best work of the kind in Europe. And why not? We have as bright minds and as skillful hands, but it requires superior designs to work upon, and a combination of taste, skill, and patience to succeed.

The importance of appreciating the value of handwork is also embodied in the general idea of proprietorship. To illustrate what I mean: In Paris, I saw at the Exhibition of Industry and Science some very handsome enameled copper work. On securing the card of the manufacturer, we concluded to call upon him, and drove to his place in the lower part of the city, a small, three-story house, and were shown in by what appeared to be the wife of the manufacturer. We finally asked to see the factory, and were taken through a series of rooms into the rear of the house where the manufacturer, in a frock, was at work with two or three other men painting and preparing the copper for the different processes. This manufacturer was proprietor of his own establishment, and happy with his family in managing his own business. If it were possible to produce these goods by machinery, the probabilities are that it would be done in a large factory; but the fact that it was the man's individual skill which made the work a success revealed the importance of endeavoring to develop any industry which would make the managers of it independent proprietors. The different manufacturing industries of the present day are conducted on such an extensive scale that it requires the investment of enormous sums of money in expensive plants, and only associated capital can become proprietors of these large businesses. Now it seems to me that small individual proprietorships of industries can come through those branches which depend upon individual skill.

In looking this summer at the civilization of Denmark, Norway, Sweden, Russia, Germany, and France, and reviewing the trip we made a year ago, and my own experience of the past year, I am convinced that the great problem which we are trying to solve is very much wrapped up in the thought of educating the people to find happiness in a busy, active life, and that the occupation of the hour is of more importance than the wages received.

In addition to educating the people to find happiness in their occupation, is the further step of educating them to appreciate the value of home. To this end we have been doing what we could in circulating good literature, and in the endeavor to make people thrifty. Aside from the hope that we might encourage people to buy homes for themselves, is the higher element of happiness which comes from an appreciation of the wisdom of finding contentment in one's own family through a better knowledge of domestic economy.

Home is the center from which the life of the nation emanates, and the highest product of modern civilization is a contented, happy home. How can we help to secure such homes? By teaching the people that happiness, to some extent at least, consists in having something to occupy the head and hand, and in doing some useful work.

CONCLUSION.

The world goes on, and Pratt Institute, if it fulfills the hopes and expectations of its founder, must go on, and as the years pass, the field of its influence should grow wider and wider.

As I said last Founder's Day, the developing and enlarging power of the Institute must be in itself. The giving which counts is the giving of one's self. The faith-

ful teacher who gives his strength and life without stint or hope of reward, other than the sense of fidelity to duty, gives most, and so the record will stand when our books are closed at the day of final accounting.

So to my sons and co-trustees, who will have this work to carry on when I am gone, I wish to say: The world will overestimate your ability, and will underestimate the value of your work; will be exacting of every promise made or implied, will be critical of your failings; will often misjudge your motives and hold you to strict account for all your doings. Many pupils will make demands and be forgetful of your service to them. Ingratitude will often be your reward. When the way is dark and full of discouragement and difficulty you will need to look on the other side of the picture, which you will find full of hope and gladness. So I would give you a word of encouragement and cheer, and possibly I cannot do better than to impress upon you the wise counsel of an ancient sage from another race, as follows:

"You do not live for yourself. If you live for yourself you shall come to nothing. Be brave, be just, be pure, be true in word and deed. Care not for your enjoyment, care not for your life; care only for what is right. So, and not otherwise, it shall be well with you. So the Maker of you has ordered, whom you will disobey at your peril."

My experience in business and in the active life I have lived has led me to believe that any institution, or community of men, whose action is based upon this principle will be a success. The teacher and the taught will catch the inspiration, and so long as we are true to these foundation ideas all will be well.

The following extracts from the report of the Secretary will serve to show the growing activities of the Institute:

REPORT OF THE SECRETARY.

The results of the past year's work have shown more clearly than ever before the value and wide-reaching effects of the instruction given at the Institute. The classes have been better organized, the work more systematized, and the pupils of a better grade than at any previous time. While fewer new lines of instruction were organized during the year, each department has broadened and developed many of its own branches.

At the beginning of the year the Kindergarten and Thrift Departments were organized; the former, to develop the various branches connected with the training of children, and the latter, to afford a safe place where small sums of money might be deposited or loaned for the purpose of making persons independent.

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Another very helpful step was taken during the spring when an annual catalogue was issued, which contained, among other things, full courses of study. This catalogue, together with an extensive exhibition of the work of the Institute at the annual meeting of the National Educational Association, at St. Paul, has done more than anything else to give the public a definite idea of what we are doing. The first edition of the catalogue, over 10,000 copies, has been exhausted, and a second edition is now being printed.

We have endeavored to keep the public in touch with us by means of frequent invitations and exhibitions of our work. Every assistance has been given to all who showed the least interest in examining the Institute, its methods, facilities, and scope. Over 10,000 visitors inspected the buildings during the year. So impressed have people been, that in many parts of the city organizations on a small scale have been started. This is especially noticeable in the case of cooking, sewing, and millinery classes which have been undertaken, sometimes under our own management, but oftener under that of others.

We are striving to give the very highest grade of work possible, with the best trained teachers, and most modern facilities, and it is not strange that others are coming to us for suggestions.

The report of the Technical High School Department shows growth and activity in all its classes.

The record for the year 1889-90 in the Technical High School Department possesses especial interest from the fact that in September of this year the department had for the first time its full quota of classes, while the following June witnessed the first graduation exercises, and the consequent appearance of alumni in the department's history.

Starting, as it did, in a small and somewhat irregular way during the year 1887-88, the department has grown steadily, and is now doing its part toward solving the problem of combined mental and manual training. In this solution certain elements are already well established.

The course for both drawing and manual work for boys and girls has been successfully prosecuted.

The year's work in these two lines has done something toward removing the common misunderstanding of the nature and object of such work, and to show that it may rightfully claim a place in a general education. We have on all sides met the popular idea that manual work is valuable to those only who contemplate a mechanical pursuit, and that drawing is for those alone who possess decided artistic ability or taste. It has been possible during the year to see something of the value to all classes of students of both these branches.

The following is the general summary of the work in the Art Department.

ART DEPARTMENT.

Owing to the greater facilities offered by the addition of six new rooms, and by the increased number of students and teachers, many changes and improvements have taken place in the Art Department during the school year of 1889-90. The pupils who could attend three mornings only were referred to the afternoon classes, and the morning classes limited to five-day students who enter for regular courses of study of two to four years, according to the work selected. The session was also lengthened three-quarters of an hour, instruction being given from 9 to 12:45 o'clock. As a consequence of these changes the studios and class-rooms have been filled with earnest students, who have devoted every morning to study, and in many cases have worked the entire day throughout the year.

The added rooms have been used by classes in wood-carving, clay-modeling, architectural, mechanical and freehand drawing. The other studios of the department have been occupied by classes in design, water color and oil, and by the antique and life classes.

Several teachers were added during the year, and as the number increased, each was enabled to concentrate thought and effort upon one special line of work, and in consequence to become more thorough and systematic in instruction.

The courses for morning classes are planned to cover two or more years, and, therefore, with but few exceptions, applicants were admitted only at the beginning of the September term. Applicants were admitted to the afternoon and to the evening classes in September and in January, and also to the afternoon classes in April.

In April, art needlework became an added feature of the work of the department, and the students of this class began a regular course in drawing and design,

Enrollment for the year.

Morning classes.....	218
Afternoon classes.....	154
Evening classes.....	298
Technical High School classes.....	76
Domestic Science classes.....	199
Total.....	945

Instruction has been given in this Department to students in the Regular Art Course, to the Normal Class, the classes in Technical Design, Wood-Carving, Clay-Modelling, Art Needlework, as well as to the Technical High School Classes, and the Domestic Science drawing Classes.

In the Department of Mechanic Arts, increased efficiency is reported. The Music Department, reports 17 classes with 66 pupils in Day Classes, and 220 in Evening Classes.

The following statistics of visitors to the Technical Museum are reported:

The museum has been opened to the public on Monday and Friday evenings and Wednesday afternoons during the year.

The number of visitors has been as follows:

	No. of visitors.	Average.
Monday (7:30 to 9:30 p.m.).....	827	28
Wednesday (3:00 to 5:00 p.m.).....	1,513	48
Friday (7:30 to 9:30 p.m.).....	1,449	47
Total.....	3,789	42

In addition to this it is estimated that during the exhibitions fully 4,500 people have visited the collection, and the total number would therefore amount to 8,289—about 400 less than last year.

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There have been added to the collection about 1,260 specimens, making the total number now in the museum 6,600. Of these about 3,900 are classed under minerals and rocks, and the remaining 2,700 belong to the technical collection proper.

The use of the Library has kept pace with the development of the other departments. The intelligent purpose of the direction of this library has been, from the first, to stimulate in every practicable way reference to its collections by the students in the several departments; and, also, to develop its usefulness to the community as a circulating library.

The Reference Department where English, French, and German authorities are kept, with an index or subject card catalogue; and the Reading Room, where the visitor is supplied with any books required;—some 20,000 visitors are recorded as using this room during the year 1890-'91,—are both open to the public and to the students of the Institute.

As an illustration of the attention given to training pupils in a knowledge of the uses to be made of a library, the following from the Record of October 1890, will serve.

TALKS TO STUDENTS.

In connection with their regular course of study it has seemed advisable to give the students of the Technical High School some instruction in the use of the library, particularly of reference books. A series of talks has been planned which shall convey in the simplest manner possible a little knowledge of the various works of reference and the way to use them. This plan was put in operation before the close of the school year. It embraces brief talks on the subjects arranged as follows:

1. Encyclopædias—English, French, and German.
2. Dictionaries—English.
3. Biographical dictionaries.
4. Atlases and gazetteers.
5. Books of quotations, hand-books, etc.
6. Reference books in special classes.
7. Poole's Index, and other allied works.
8. Use of various appliances in the library. Card catalogue, etc. Explanation of classification.
9. Hunting down a subject.

LITERATURE CLASS.

It is hoped that in the Fall it will be possible to carry out the project of inaugurating a class in literature under the auspices of the library. The plan as contemplated embraces English and comparative literature, and if undertaken will probably consist of a course of instruction embodied in familiar talks conducted on the seminar plan.

A class in the technical work of cataloguing has been organized with a course of ten months divided into three terms, and meeting for instruction one hour in the morning three times a week. The forming of a practical trade school of book binding, is also suggested as desirable. The general work of the Library during the year is thus spoken of:

LIBRARY.

The work accomplished in the library during its second year has been characterized by a systematic development in its various departments, looking toward a broadening influence and increasing usefulness.

To this end numerous plans have been inaugurated which have in view the future value and development of the library as well as its present efficiency. The quick success which many of these plans have met, when tested, has been a matter of encouragement and inspiration to continued effort.

The importance of the free public library as a factor in the education of the people, and as a means for the acquirement and dissemination of knowledge, is receiving more emphatic recognition from social scientists and educators every day, and this recognition should serve as an incentive to every library to push its influence and widen its scope of usefulness.

The library of the present day is not a musty collection of unused volumes of leisure, but a live community of hard-worked books, serving an end which no other educational institution is so well adapted to serve. It furnishes books, and by books,

ideas, to the practical mechanic, the housekeeper, and the school-teacher, and in so doing it furnishes them capital, by adding to their equipment for the performance of their duties in life.

REFERENCE DEPARTMENT.

No one who has not had experience in some much-used library can realize the extent of the demand made upon the reference department by its readers. The school-boy comes with a subject for an essay that has been assigned him by his teacher; he wants to read something that will help him in his task. The inventor is working up a patent, and wants to find if any one has anticipated his discovery, and also to read on this or that feature of his invention. The manufacturer is working out some new process or discovery, and wants to look up a fact in chemistry. All require help, and all require more or less personal attention.

* * * * *

CATALOGUING.

The number of volumes catalogued during the year was 5,342. The partial time of four persons has been given to this work, and it is thought that the amount accomplished is a very fair showing. The title catalogue has been pushed as rapidly as the pressure of other work would allow, and now contains about 8,100 cards.

The use made of the Library as a general Circulating Library with an interesting analysis of the classes of books taken, is thus shown:

REGISTRATION.

The number of borrowers registered during the year was 3,026. Total number registered to date 9,515.

CIRCULATION.

The number of volumes taken for home use during the year was 98,909.

1889-90.

	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	Total.
Bibliography.....	18	46	57	86	117	122	145	88	147	106	81	59	1,074
Philosophy.....	31	32	53	55	60	42	51	51	66	62	51	39	593
Religion.....	48	38	30	67	61	66	73	57	99	62	81	50	732
Sociology.....	45	38	41	65	93	70	97	119	121	55	128	75	987
Philology.....	7	8	10	12	16	12	20	15	25	18	18	16	177
Science.....	118	86	122	147	184	160	224	254	323	212	208	186	2,174
Useful arts.....	61	104	166	228	255	232	294	296	329	273	230	194	2,662
Fine arts.....	100	81	88	120	163	169	200	236	256	23	198	161	1,965
Literature.....	162	186	204	296	343	283	342	251	406	321	306	214	3,422
Fiction.....	4,486	4,096	4,153	5,521	6,294	5,946	6,953	6,189	7,081	7,302	7,688	6,288	11,949
Travels.....	386	330	342	503	657	617	746	684	673	574	490	424	6,426
Biography.....	141	146	176	227	270	223	292	349	327	314	262	248	2,975
History.....	158	144	174	301	377	343	418	423	489	348	343	226	3,743
Total.....	5,761	5,337	5,616	7,628	8,890	8,285	9,855	9,111	10,342	9,920	10,084	8,130	98,909
Daily average.....	230	198	225	293	370	331	379	387	398	381	386	325	325

Total for year ending June 30, 1890..... 98,909

Total for year ending June 30, 1889..... 89,650

Advance on last year..... 9,259

Access to the Library is not limited to the pupils of the Institute nor is its circulation confined to residents in its vicinity as the following extract shows *Digitized by Microsoft®*

ASTRAL BRANCH.

This branch library was first established solely for the benefit of the residents of the Astral apartment house, but its privileges were afterwards extended to all residents of Greenpoint, and it was opened as a free public library.

About one thousand volumes were placed upon its shelves at that time. These were classified and prepared for circulation at the main library, and an author list of the books was also prepared at the same time. Books are still delivered from the main library by messenger, as the branch is not adequate to all the demands made upon it. About one thousand more volumes are now on the work tables of the main library and will soon be in readiness to be shelved at this branch. The number of subscribers is 516. The number of books given out for home use from March 4, to July 1, 1890, was 5,094. Visitors to the Reading-room approximate 15,000.

The growth of the library, the care taken of the books, and the attention given to making it easy for persons to avail themselves of its treasures are thus set forth:

FRENCH AND GERMAN BOOKS.

The nucleus of a collection of French and German books has been made by the purchase of several thousand volumes, embracing the standard works in the literature of these languages. These will be placed in circulation as soon as they shall have been classified and catalogued.

BINDERY.

The number of volumes sent to the bindery during the year was 1,425. Current volumes of magazines are bound as they are completed. The number of books mended in the library was 11,395.

FINDING LIST.

Arrangements have been made to print at once a class list of English prose fiction, which lists will be sold to the public at a reasonable price. The preparation and revision of this work is now about finished, and the manuscript will soon be placed in the hands of the printer. It is hoped that these lists will prove a convenience to the borrowers, and will greatly facilitate the use of the library. The arrangement will be a simple alphabetical one with author and title entries.

Perhaps in no other way does the Pratt Institute link itself so closely to the interests of the general public as by the very liberal opening of its library to the use of the people. In this, as in the more characteristic features of the technical art and Industrial Education here provided, the all embracing benevolence of its founder in his purpose of benefitting the community is clearly revealed. It is from a wish to set forth distinctly the liberal character of this remarkable Institute in all its multifarious features, and to show in how many ways of usefulness this purpose to give training in Art and Industry has developed, that has led me to give so much space to the account of these various instrumentalities which, while possibly some of them do not strictly come within the topics to which this Report is technically confined, still strikingly illustrate the solidarity of interests, of studies, of occupations, which go to make up

the welfare of the community in this our modern era of civilization. Libraries, and museums of Science, Art, and Industry, are indispensable. These experiments, thus inaugurated by great hearted men in our several towns and cities, are shining object lessons for the communities in which they are placed. It is for this reason that so much space has here been given in this volume of the present Report to the accounts of these typical kindred experiments in various parts of our country ; in order that their origin, their methods and their results, may be so fully and plainly set forth, that the public may be able to select such features as it may be most desirable and feasible to incorporate into the institutions established by the people, for the education of the people ; for it cannot be too often repeated that, admirable as these efforts by individuals, or by incorporated societies, may be ; no one but the people themselves, are equal to the prodigious undertaking of providing adequate facilities for the education of all the children of the people. These schools, institutes, museums, libraries, are but models to be copied or avoided as the case may be, by the public in their educational provisions.

While apparently in the full vigor of manhood, actively engaged in his pursuits and enthusiastically devoted to the welfare and development of the Institute, for which he was planning additional buildings and enlarged facilities, and to the interests of which it seemed that he could reasonably anticipate devoting himself for years to come, the public and the friends of Mr. Pratt, were startled by the notice of his sudden alarming illness, speedily followed by the announcement of his death !

This occurred May 4, 1891. The interest shown by the public at his decease, gave proof that his efforts for the welfare of his fellow men had been attentively and intelligently observed by the community and by a widely extended public.

The letter of Mr. Perry, given in a previous page, conveys the gratifying assurance that the work so wisely inaugurated will continue to be developed along the lines laid down by the Founder. In this case, as notably in that of Mr. Cooper, in the neighboring city of New York, the hearty coöperation by the children of the founder of the trust, in all his benevolent purposes, is in most pleasing contrast with the scenes so often witnessed when the inauguration of enterprises in the interests of the community have been postponed till after the death of the would be philanthropist, and funds, carefully designed for public uses, are diverted to the private interests of heirs, near or remote ; while nothing remains to witness to the thwarted good intentions of the testator, but a record of embittered litigation, and a "broken will."

The following address delivered by the son and successor of Mr. Pratt, on the anniversary of the opening of the Institute, derives especial interest from the insight it gives of the character and pur-

poses of its Founder while, in its evidence of the growth of the institution and the indications that the present management is alert to discover and to adopt whatever promises to promote the interests of the Institute, it is full of assurance that the purposes of its foundation will be energetically prosecuted. The Financial Statement at the end is a remarkable showing as the gift of a single individual to the public.

This address, with that of the principal of the art school on presenting to the Institute in behalf of the pupils, a bronze bust of Mr. Charles Pratt, precedes the usual reports of the several departments given in the annual "Record,"* and are both here given in full.

PRESIDENT'S ADDRESS.

FOUNDER'S DAY, OCTOBER 2, 1891.

We are here to-day, fellow-workers, students, and friends, to celebrate the fourth anniversary of the establishment of Pratt Institute, and the sixty-first birthday of its founder.

One year ago I ventured the opinion that none other than he, so long as life lasted, should speak at these annual celebrations, and expressed the hope and expectation that for a generation at least he would be permitted to perform this part. I felt then, as even more strongly I feel to-day, that he was our master, the genius of the educational life of this institution, our light to guide us into new and untrodden fields of applied knowledge, and our inspiration to give of ourselves as he had given of himself. No one could, therefore, speak here with the peculiar significance and power with which he spoke. No one could ever again so speak. There was every reason to believe that he would continue to lead us for many years to come, but through an all-wise Providence our celebration *in nomine* has now become *in memoriam*. His closing words a year ago to us, his sons and co-trustees, were startling in their solemnity and directness. What called them forth? Why did he utter them at that particular time? This is but one of many like instances wherein, as we look back, there is not wanting the evidence that his earthly work was unconsciously, but providentially and, therefore, completely finished. This is one comfort and relief to our oppressed minds; this, and this alone, stops questioning, and tends to answer the otherwise unanswerable, "Why! why! is he not here?" It turns aside the insidious "if." If he had lived less actively, more careful of himself, less devoted to his work, and less unselfishly for his day and generation, would he not have lived longer and been with us here to-day? He lived his natural life, unselfish as it was, for he could live no other. Such a life was to him the highest satisfaction and greatest joy. That you know. Do you remember his saying to you here one day: "I am so grateful, so grateful that the Almighty has inclined my heart to do this thing." The source of his life-joy was clearly indicated and was always the same. He never hesitated to acknowledge it, for he desired that we might all secure the same.

STRONG INDIVIDUALITY OF THE FOUNDER.

His personality, which means much more than any of us can realize or express, is gone. Its loss has grown apace with the days and months; it does not lessen. This is what I feel here in this place of all others. The strength and force of that face so full of life and courage, so responsive to every honest and self-helpful ap-

* Pratt Institute Record No. 3. Founders Day Number. Published by Pratt Institute, Brooklyn, N. Y. Digitized by Google

peal for aid, the brightness of those eyes so penetrating that we always felt ashamed to meet them when we had not done our best; the restless activity of that body with its energy and responsiveness to every need of the mind or heart; these are gone, but the personality they constituted was once here. It ministered to you and to me; it left a deep impress upon its generation. Shall all this be lost? Shall it all fade away, its outline growing more indistinct as the years go by until lost among the multitudes of the dead? That such might be the case our founder fully realized. Often did he speak of it to me as his old and early friends went before, and his own actively earnest life was confessedly too full for leisure to dwell upon their memory. While I realize the possibility of such a result I do not see its necessity. You and I may, perhaps, look at this matter from different standpoints, and yet I do not think we do. His desire to serve was extended to you all as well as to me, the same in kind if not in degree. To us, his sons and co-trustees, has been committed this trust, and for its keeping nothing seems to me so inspiring as to recall his life and personality. We, therefore, for ourselves and for all who knew him, for all who shall hereafter come into new life and power through his thought and beneficence, shall keep fresh in memory his personality, and cherish the spirit of his life. This, then, is to be our watchword, our safeguard, and the source of our courage and fidelity to trust. October second, our Founder's Day, is the day when we shall think of him and of what he has left us to do.

RAPID DEVELOPMENT OF THE INSTITUTE.

All have marveled at what he accomplished in the development of his purpose to establish this Institute. In four years of outward demonstration problems were solved and an educational impulse was organized, so defined and centered as to accomplish what has usually consumed a generation in the doing. That it was only a foundation none knew so well as he; that it held great possibilities and hopes he clearly indicated, and yet the evidences of its wide influence for good are even now coming to us continually from many quarters. Our clear course is, then, to build on the foundation which he laid. How much that means can, perhaps, be gathered by reference to our charter. For the immediate future we shall endeavor to prosecute the work of the Institute along its present lines, and to take up specifically each of those new movements and developments which he had in mind. Some of them were maturely thought out, others were under consideration—as yet incomplete and of uncertain value. These, one and all, we mean to put to the test of actual experience. Not at once, but as we can naturally embody them into our present system of work. We shall probably find, as he found, that experience is our great teacher, and that what would, from a mental basis, seem to be practical and helpful may not so prove. Such a discovery might lead to modifications in the original thought.

NEW PROBLEMS PRESSING FOR SOLUTION.

What, then, are these new problems? One of the latest of these which our founder tried to solve was how to educate young men to appreciate the country, and life upon the farm. This was referred to him a year ago to-day. As a result of his efforts, fifteen young men went to Glen Cove early in July, and remained there under the charge of a graduate of Cornell University until early September. The work was pursued with a large increase of enthusiasm, method, and intellectual purpose over that of a year ago. The instruction in the class-room was principally by lectures, the design being to give the students a knowledge of those general principles and facts upon which agriculture is based. With this end constantly in view, the structure of plants and the functions of their various parts were considered, followed by the chemistry of the soil, its origin and composition, particularly in relation to plant life. This was in turn followed by the study of the dif-

ferent breeds of horses, sheep, and swine, and their distinctive characteristics. The practical occupation of each day was devoted to the preparation of the ground, the working and harvesting of the crops, and to the care of farm animals and farm equipment. So far as we can learn the experience was unique, different from almost any other, and of value in health-giving, agreeable, and useful qualities.

We have been much in doubt how best to develop our founder's thought. To establish such an educational movement entirely independent of and away from the Institute has not seemed wise. To add to or draft upon our present Technical High School Course an agricultural department has not seemed feasible or practical. In fact, we are inclined to the opinion that neither of these was what our founder had in mind to do. Our purpose will, therefore, probably be to carry out a similar line of work next year, with such additions in both intellectual and field departments as can come by beginning earlier in the season and prosecuting the work well into September. There can be no question of the enlarged educational influence which such work will exert upon those who pursue it. Its economical or wage-earning value is unquestioned. but just how to secure it practically is not yet clear.

VALUE OF ELEMENTARY TRAINING AND KINDERGARTEN METHODS.

While it is certain that the young men and women who have annually presented themselves for examination for entrance into our Technical High School Department have, with the years, appeared to be better equipped for this peculiar work, yet there were very few of them whose early training had been along similar lines, by which I mean kindergarten and manual training methods continuously employed. The few who had received such were noticeably more apt and ready to appreciate and appropriate the instruction given here. Their power of attention has been so trained by the cultivation of their natural senses as to be greater than that of the average student. This was what our founder expected. Its practical demonstration made his way clear to act. Two considerations were foremost in his mind :

First. To make the way open to as many young people as possible to intelligently enter upon the Technical High School course of instruction at Pratt Institute.

Second. To establish for other schools a type of what kindergarten and primary education should be.

The principle underlying this method of instruction was to him so valuable that he determined to see in Brooklyn a complete illustration of it from the kindergarten through the primary grades, and so on to the high school course given here.

From its very beginning he had been acquainted with the work of the Froebel Academy, located on Tompkins Park, and believed it to be the best exponent of his own ideas. Thus he concluded to identify himself and the Institute with that Academy if it could naturally be brought about.

As is now well known, our founder's wishes were duly realized, and in June last the property and good-will of the Froebel Academy were purchased by the Trustees of Pratt Institute. This is an important departure. We fully realize it. It is no easy task to establish and maintain a true kindergarten—one worthy of the name. To carry forward this same kind of work until it shall touch the high school course has never yet been satisfactorily attained in any large way. This is the task before us. Happily for us the worthy men and women who inaugurated and developed the educational life of the Froebel Academy are still identified with it as our willing helpers. What this academy most needs is a new building, with better physical equipment, and this we shall make it our first study to provide so soon as our Technical High School building is completed.

Here in Brooklyn, primarily, was our founder desirous of making an impress upon educational life through the work of the kindergarten. The Froebel Academy will, we believe, furnish the type for all similar institutions, and from its many patrons, from members of the Froebel Society, will continue to flow a strong

influence to this end. So, too, in other sections of our city are similar agencies at work. What has been needed was the uniting of all these into one organization to which should be committed, in a general way, the development of the best kindergarten methods and the establishment and maintenance in other neighborhoods of similar schools. This movement was very much desired by our founder; he had often urged it. It was, therefore, with peculiar pleasure to us that in June last, at the call of a representative body of our citizens, the first meeting of the Brooklyn Kindergarten Association was held here in this hall. This Association is, of course, in no sense an integral part of Pratt Institute, nor is it in any way under our personal direction or control. It will be our privilege, however, to continue in this service one of our own most earnest and intelligent workers who has done much to bring together these latent forces ready for their great work. Thus is our founder's beloved Institute giving of herself to bring into new educational life and light the children of this—the city of his home.

ELEMENTARY ART TRAINING.

The past year was, indeed, one of culmination of effort in many directions, and this, the last which I shall now mention, has come after many months of conference and study. You will recall the fact that the first of all the departments established here was the Art Department, and that the first instruction given was in drawing which was thus recognized as the foundation of all manual and industrial training. This pre-eminence of drawing is now, I believe, generally acknowledged; certainly it is in this country. But may we not give even a larger place to this study? Our founder at least has grown to believe so. This larger place he recognized should be found in the instruction in all public and private schools of our land—not for any technical or special development, but solely for an enlarged educational training to bring into being and use another sense, the power to perceive and so to compare, discriminate, represent, and thus accurately describe that which was seen.

We placed in our office last June a circular which reads as follows:

“It is the desire of Pratt Institute to co-operate with all educational movements that have for their object the promotion of art and industrial education, and that are directed toward this end in accordance with approved methods.

The development of these subjects may be largely influenced in three ways:

First, By clearly formulating the principles and methods which should govern the teachings of these subjects in public schools, and by establishing standards of work suitable to the various grades of schools.

Second, By training special teachers and supervisors of drawing to a right understanding of art and industrial education as related to general education, also by giving the great body of public school teachers opportunities to become acquainted with good standards of such, as well as with approved methods of instruction.

Third, By leading the public to see that this movement for art and industrial education is a movement for the social elevation of the people. This idea to be developed through exhibitions, and through public discussions growing out of such exhibitions.

THE PRANG EDUCATIONAL COMPANY.

The aid that has been given to art and industrial education by the Prang Educational Company, through its provision for the instruction of teachers by home study and correspondence and by its exhibitions of public school work and by its Educational Conference, has long been recognized by the most prominent educators as of the most efficient character, while the adoption of its methods of

instruction in the leading public and normal schools of the country, and the results that are flowing therefrom, are substantial attestation to the wide extent and educational value of its work.

PROPOSED COÖPERATION.

Pratt Institute, therefore, is pleased to co-operate with the Prang Educational Company in furthering their work in public education; and to this end arrangements have been made whereby the instruction by correspondence through Prang's Normal Art Classes will be greatly broadened in character, and whereby loan exhibitions of typical art and industrial work from various public and technical schools and from classes of Pratt Institute will be prepared for general circulation to cities and towns desiring such exhibitions."

It is at times like this when I try to lift myself up to the plane of seeing far ahead, and of thinking large thoughts for others' good, and of planning comprehensively for their execution, that I instinctively turn to him who would have gloried in making clear to you to-day this last grand purpose which I have just outlined. To those who have been able to give this matter consideration there is no question of the future influence this movement will exert. It may seem far away and of no immediate relationship to Pratt Institute, but such is not the case. The Prang Company has been working in this direction for many years. They recognize that Pratt Institute is the highest and best exponent and example of manual and industrial training; that now through your work here there is completeness of illustration and effect of illustration from the kindergarten to the actual industrial work in life. It thus gives point to our *raison d'être*, in this day of material and economic forces. It allies things beautiful with things useful, and so tends to elevate the standards of labor and the products thereof. But above and beyond all this, as I have said, is its value as an educational influence which must be felt by every child without exception. To you, teachers and directors, who have worked with us here, let me say that your work has made this possible, for the Institute is now recognized as the type or pattern which through this movement in co-operative education will, we trust, be reproduced in many places.

ENCOURAGING PROGRESS IN ALL DEPARTMENTS.

I have referred mainly to those matters connected with the Institute with which you are probably not intimately familiar. This does not by any means imply that the work in the regular departments is not worthy of special mention. As I have read with deep interest the annual reports of the directors, I could not fail to be impressed, as I doubt not will be the experience of all who shall read them when they appear in print in our Record, with the great and growing work being done. There seems to be nothing standing still; progress is apparent on every side. The tendency is in two directions: more thorough work in all departments, naturally to be desired in so young an institution; more comprehensive work in many of them. This latter is indicated as follows:

A. In the Art Department. By the opening of the new two years' day course in architectural and mechanical drawing, embracing, beside work in geometry, principles of construction, machine design, properties of metals, etc., and intended to prepare students to become thoroughly competent draughtsmen.

B. Domestic Science Department. By the advanced two years' normal course. During the first year this will embrace lectures and recitations in German, physics, energy and heat, chemistry, biology, bacteriology, and physiology, with applied work to include sewing, laundering, and cooking. During the second year, the course embraces chemistry of foods, calculation of dietaries, hygiene and home nursing, and home sanitation.

C. In the Mechanic Arts Department. Evening courses in science and technology have been offered to those who desire to equip themselves in subjects of direct value in industrial pursuits. They include:

First, Geometry, particular care being taken in this to bring out the application of this science to manufacturing processes, the course extending, if desired, through two years.

Second, Chemistry. Special stress will here be laid upon the application of this science to manufacturing processes, the course extending, if desired, through two years.

Third, Electrical construction. This field is of such growing importance that the course of instruction has been arranged with great care and discrimination. It aims to give a knowledge of the principles of dynamic electricity and magnetism, and to trace the application of these principles to the methods and construction of actual practice.

Fourth, Steam. The instruction deals with the natural laws of heat, combustion of fuel, the laws of steam generation, relation of heat to the working of the engine, the principles involved in the construction of boilers and engines, the behavior of material under strain, resistance and tension, and theory of beams.

D. In the Department of Commerce there has been added the study of Spanish, a knowledge of which is now beginning to be almost a commercial necessity.

E. Libraries. By new departures in the work of our libraries a school for the practical training of library assistants has been formed. The aim of the school is to inculcate the principles of a true, modern library spirit, and to teach, in as thorough and practical a way as possible, the methods of our own and similar libraries, at the same time indicating by means of lectures and talks the scope and breadth of librarianship as a profession.

CLASS IN ENGLISH LITERATURE AND OTHER PROPOSED CLASSES.

One of the most interesting features of this school in library economy has been the instruction given in English Literature. This class has been formed in response to a largely expressed wish for guidance in reading, and is not confined to members of the Library Training Class, but has been opened to the public in answer to frequent appeals from those anxious to read in some systematic way.

The same interest which urged the formation of a Library Training Class introduced also a course in cataloguing methods. Its scope is limited to the development of efficient cataloguers, and no part of the instruction duplicates that general course.

In November next a class in reference work for teachers will be formed which will continue its work into the winter. In this case also the effort in the Pratt Institute Reference Department is not to create a demand, but to supply the desire evinced by teachers in our public and private schools for definite, expert knowledge of the best reference books. Its purpose is to furnish to busy teachers, by means of these reference classes, assistance in a most important part of their school work.

Thus is our library not only a storehouse of knowledge, but a center from which go out literary and helpful forces supplementing our work in all departments and intelligently anticipating the literary needs of many people.

These twofold tendencies in the work of Pratt Institute are due to the zeal and devotion of our directors and their co-laborers. Their thinking and planning has wrought great results. The policy of our founder was always to place responsibility upon the heads of departments and to give to each of them large liberty to plan and recommend. This has brought great enthusiasm. We thank you in his name for the constancy of your purpose and for its unselfish service.

For several reasons it has seemed best to the Board of Trustees that I present the following financial statement of the property belonging to the Institute and of the disposition of the income of the year just closed.

Property and Endowment Account.

Endowment fund.....	\$2,000,000.00
Real estate, building and equipment fund, to be used as required...	885,000.00
Cost of present Institute buildings, equipment, and grounds	523,337.61
Cost of Astral, Inwood, and Studio Buildings.....	332,437.07
	<hr/>
	\$3,690,774.68
Income from endowment fund, rents, leases, etc.....	\$182,136.23
Less deficit, Institute expenses, and receipts	120,462.90
	<hr/>
	61,673.33

Expenses and Receipts of Pratt Institute.

Expenditures :

Salaries for year ending June 30, 1891.....	\$93,698.48	
General expenses, depreciation, and loss account.....	49,132.70	
	<hr/>	\$142,831.18

Receipts :

From tuitions.....	\$39,150.45	
From sundries, sales, etc.....	13,931.73	
	<hr/>	53,082.18

	<hr/>	\$89,749.00
Paid for increase of equipment, additions to Library, and purchase of Froebel Academy		30,713.90
	<hr/>	
Total deficit for the year.....		\$120,462.90

PRESENTATION OF MEMORIAL OF MR. CHARLES PRATT.

At the close of the President's address, Mr. W.S. Perry spoke as follows :

Gentlemen of the Board of Trustees :

I am here this morning by request of a committee that I may represent through them the instructors, students, and all who are in any way connected with Pratt Institute. It has been stated that this is the fourth Founder's Day. Some of us are able to count it of very great value that we have been connected with this institution almost, if not quite, from its very beginning. Much has been crowded into the four short years; much has been done for the development of various lines of industrial, technical, and art education; but, more than all this, we have been brought into close relationship with that man who had the heart to conceive, the wisdom to direct, and the courage to execute a work, novel in many of its methods, and yet a plan so comprehensive as to place this institution already among the institutions of learning of the land.

Those who were present on the first Founder's Day can never forget the address of that morning. Mr. Pratt came upon the platform alone. He had not asked a man of eloquence to speak for him. He chose to address the students for the first time when others were not present. He made us his confidants for the time being and spoke to us out of the simplicity of his heart as he unfolded the plans for the future development of this institution. Never shall we forget that address, given with a homeliness of expression which in the man was the type of the truest eloquence; for he never spoke without commanding the closest attention of every one of his hearers. No one went away that morning without feeling a higher pur-

pose in living than he had before. As one said : "Though I live twoscore years, I believe I shall never hear an address coming so directly from a man's heart, an address so full of beautiful thoughts so simply expressed." I said that he came upon the platform alone, and yet not alone, for I have but to use his own words as he said to us : "Whatever I have done, whatever I hope to do, I have done trusting in the Power from above," and, taking up the Bible from the desk, he read a chapter peculiarly fitting to the occasion ; and then that man of business, in a few words of prayer, gave thanks to Him who had led him to conceive such a work and had prompted him to give of his means abundantly for the good of thousands of others, and asked the blessing of God upon the development of this institution in the future.

Our minds go back to the Founder's Day of one year ago, when Mr. Pratt spoke those words so singularly prophetic of the end that was soon to come, and when he was tempted, seemingly, for one moment to answer the inquiry so often made in regard to what he had given for the founding of this school, he quickly said : "Why should I state what I have done? The giving which counts is the giving of one's self." And if ever man gave himself for the good of a great and noble work, I believe that man was Mr. Charles Pratt.

It is not for me to recount the sad days of last May; but when all had been done that could be done at that time, there came, with beautiful spontaneity, from student and teacher alike, the inquiry, "What can we do to show in a more lasting manner our deep love and our appreciation of the man who has done so much for us?" Singularly enough, on that morning of Mr. Pratt's death, Mr. Adams, the artist, finished a bust in clay upon which he had been at work for many weeks. "What could be more fitting," was asked by one and all, "than to present that bust in bronze to the Institute?"

What I have to say now may savor somewhat of a report ; but it seems best that I should make a slight allusion to the details of this matter because of a most beautiful coincidence. Mr. Adams generously offered to donate all of his work, and to design the pedestal if the students and teachers could do the rest. The committee appointed to carry out the wishes of the large body of teachers and students made a statement of what would be required. The sum was large; there was no means of stating, nor any desire to state, what was required from one department or another; but from individual after individual, until the number reached into hundreds and even beyond the thousand, came the contributions of love and esteem, and when the aggregate of all sums given was made, the amount asked and the amount given just balanced each other within a few cents. Therefore can it not be truly said that this indeed was a gift of love? And in behalf of the instructors, students, and all connected with this Institute, I have the pleasure of presenting to you, gentlemen of the Board of Trustees, who are so nobly and generously carrying out the work intrusted to you, and to this institution which bears the name of the beloved Founder, this bust in bronze, and may the words, "The giving which counts is the giving of one's self," now cut in enduring bronze, be ever a source of inspiration and encouragement to all who shall come and go from Pratt Institute.

In reply, Mr. C. M. Pratt, President of the Board of Trustees, sent the following letter, which was read before all departments of the Institute :

DOSORIS, *Glen Cove, Long Island, October 5, 1891.*

MR. W. S. PERRY.

DEAR MR. PERRY: The wise man of old has said "speech is silver but silence is golden." To determine just when this may be true I have not found to be easy.

In lieu of any spoken word from me on Friday morning last, in response to your loving remembrance of my father, I desire herein to express to you, and through

you to those whom you represented, my appreciation of your act, and to say that what you have done is, in our eyes, more beautiful, more enduring, and more touching than anything else you could possibly have done.

You have brought back the likeness of his face and features; that which shall remind us, as perhaps naught else so well can, of his personality and his life—and not us only, but, in all human probability, generations of men and women for centuries to come. We shall cherish this bronze above everything material in Pratt Institute, and shall come to it and go from it as if it were an altar whence fresh inspiration to service flows.

On behalf of the Board of Trustees, believe me,

Gratefully yours,

C. M. PRATT.

The Secretary's report giving a history of the years work in the various departments of the Institute follows :

SECRETARY'S REPORT.

The fourth year of the history of Pratt Institute closed June 19, 1891, with a total enrollment of 3,232 students. Of this number, seventy-two were from cities other than Brooklyn, while their residences ranged from the Sandwich Islands to Brazil. The increase of nearly a thousand students over last year arises from three causes : First, a better appreciation of the meaning and value of the work given here ; second, the development of organized lines of work into more advanced study ; and, third, the organization of entirely new branches of study.

The relationship which should and which in many places does exist between the work and ideas of Pratt Institute and the general public school curriculum is becoming more widely known, especially by means of the work of our three normal classes. Through them we are doing a national work, and are spreading ideas not only of new lines of study, but, perhaps of greater importance, of new methods.

PURCHASE OF THE FROEBEL ACADEMY.

With the object of more thoroughly and practically presenting the educational value of our work and its relationship to the entire system of school life, the Froebel Academy on Tompkins Park was purchased by the trustees late in the year. By this combination of forces, a complete course of study, embracing the latest and best thoughts of education, from the kindergarten through the high school, will be shown.

Believing in the value of the principles of work as carried on in the kindergarten, a department was organized last January. While it is the expectation that the work will embrace the training of teachers, lectures, home study, etc., no class work will be taken up this year. The chief attention of the department will be given to arousing interest and enthusiasm among the people through the Brooklyn Kindergarten Association which was recently organized in this city.

Arrangements have been made by which co-operative work is now being undertaken between Pratt Institute and the Prang Educational Company of Boston. This will place before the public the complete course of study in drawing, form study, color, etc., from the kindergarten through the high school to the special technical schools.

DEVELOPMENT OF CLASSES INTO DEPARTMENTS.

In our direct work at the Institute, some of the most marked changes have been as follows : The architectural and mechanical drawing classes have developed into

full-day courses, embracing certain branches of scientific and technical work. The normal cooking classes have been enlarged in scope to embrace science, laboratory work, and domestic economy. In the evening work, much thought has been given to the development of courses in technology and science. The only new lines of work have been the organization of classes in library economy and the starting of an agricultural department, the former to provide thorough instruction to those desiring to become trained and capable library assistants; the latter to provide, by means of a summer school at Glen Cove, Long Island, training in all matters pertaining to agricultural life. The purpose of the Department of Agriculture is to reach those young men who, living in the city and attending school, never experience the broadening and developing influences of farm life. The work will consist of instruction in botany, chemistry, physiology, as well as raising and harvesting of crops and care of animals, and will continue through the summer, beginning July 1.

With the increase in the number of students has come a proportionate increase in the number of instructors and the requirement of larger facilities. In all cases no expense has been spared to secure the very best equipment and to make the conditions for good work as perfect as possible.

The plans of the public building which we hoped to start by this time were modified to embrace new conditions. That building, when completed, with the Technical High School Building which is being erected on the north side of the Main Institute Building for the use of that department, will, no doubt, fill our needs for some years.

This locality is becoming daily more prominent as an educational center. The library, with its circulation during the year of 150,000 volumes; the museum; the classes, holding morning, afternoon, and evening sessions, draw to this section people from every part of the city. Visitors of all classes have inspected our buildings, equipment, and work. No trouble has been spared to give the fullest information and to make the influences of our work radiate as widely as possible.

The second annual graduation exercises of the Technical High School and the Art Departments took place on the 16th and 18th of June. These and the Founder's Day exercises, the lectures, the various days of visitation, and the annual exhibition have been the only exercises of a purely public character that we have held.

The regular faculty and teachers' meetings have taken place at the usual periods. These, together with the social meetings of the faculty and teachers once a term, have united our work in a spirit seldom found elsewhere.

During the year a considerable amount of lecture work has been done, but mainly of a nature supplementary to our regular work. A course of lectures on "The child and his nature" was given under the auspices of the Kindergarten Department. Another course, on "Art and its relationship to modern life," was also given in connection with the Art Department. Beside these two Institute courses, five courses of lectures, under the auspices of the University Extension Society, of New York, were given in the spring.

The Thrift and the restaurant have become permanent factors in the development of our work. The Thrift, a full report of which will be found elsewhere, has increased largely in membership, and is assuming a distinct position of value in its relation to the general work of the Institute. The restaurant has been open daily, except Sunday, during the school year, and has served 41,914 persons.

The grounds of the Institute, on which are laid out tennis courts, base and foot ball fields, athletic track, etc., have been used constantly both by the students and public.

The general statistics for the year 1890-91 are as follows:

Registration.	Day.	Evening.	Total.
Technical High School Department.....	109	.....	109
Art Department.....	455	316	771
Department of Domestic Science.....	1,019	506	1,525
Department of Commerce.....	129	181	310
Music Department.....	71	233	304
Department of Mechanic Arts.....	67	222	289
Library Training.....	33	.....	33
Total.....	1,883	1,458	3,341
Number enrolled in more than one department.....			109
Individuals enrolled.....			3,232

Number of instructors	74	Number of patrons Lunch room	41,914
Number clerical force	26	Number members of Thrift	477
Number of employés	38	Number members of Library	13,280
Number visitors for year	10,000	Circulation of Library	146,852

The following reports of the departments have been written by the several directors, and modified as circumstances required.

Respectfully submitted,

F. B. PRATT.

The report of the year's work of the Technical High School Department is at some length,—only the opening paragraphs giving a general résumé of the work are here quoted.

The year just closed has been more notable in the history of the Technical High School Department for what has been accomplished in perfecting plans already begun than in introducing innovations. The course of study adopted when the department was opened has served as a satisfactory basis upon which work has been prosecuted in the same general lines followed the previous year. No new branches have been introduced, but it may safely be said that more systematic and thorough work has been done than ever before, and the energies which might have been directed toward the introduction of novel features have been devoted to unifying and elaborating the elements already in use.

The increased attendance of the year bears evidence to the growing favor in which manual training is held, and in many ways there has been manifested a more general appreciation of the aim and significance of such training. The department endeavors, as it always has, to give education which shall best fit boys and girls for whatever their later life may call upon them to do, and although parents may send their sons and daughters to us that they may learn some definite trade, yet the department has never aimed or wished to narrow its scope to this extent. It is an encouragement that the misconceptions in regard to the reasons for introducing the manual element into a system of education are gradually disappearing, thereby clearing the way for more efficient work.

As heretofore the year's work has been prosecuted in five lines: language and literature, science, mathematics, drawing, and manual work.

The report of the Art Department as follows :

ART DEPARTMENT.

During the past school year the work of the Art Department has been carried on in three distinct divisions, each division formed by a number of classes pursuing different lines of study.

In the first division have been those students who entered for some one of the full courses covering two or three years, and who have attended five mornings every week. These courses of study were: regular art, including clay-modeling, four

years ; normal art, two years ; applied design, two years ; architectural drawing, two years ; mechanical drawing, two years ; wood-carving, two years ; art-needlework, two years.

In the second division have been those students who could not give so much time to art study and who, therefore, entered classes which met but three afternoons each week to pursue a somewhat abridged course in art, applied design, wood-carving, or art needlework.

The third division has been composed of students who could attend neither morning nor afternoon classes, but who could give three evenings to the work. The special demands of these students have been even more varied than those of the day, and much individual work has been done. With the exception of the normal art, this third division has followed the various lines of study enumerated for the first.

To nearly all the morning classes students were admitted only at the beginning of the September term. In January a small number were allowed to enter the regular art class, the classes in applied design, and art needlework ; and in April a few were admitted to the class in design. To the elementary classes of the afternoon division, students were admitted at the commencement of each term ; but to the evening classes, which closed in March, only a limited number were admitted in January,—the general entrance being granted in September and the work planned and organized for the entire winter.

In the art classes fifty-four students came from out of the city, and, aside from New York, represented fourteen states and two foreign countries. The work of the students in the various courses of study follows in detail.

REGULAR ART COURSE.

The regular art classes have numbered eighty-nine students ; of these, forty-four have been in the advanced and forty-five in the first year classes. Throughout the year the latter students have given the first three days of every week to cast drawing in light and shade ; one day to design, the study of ornament and history of art ; and one day to free hand perspective and sketching. The attendance has been more regular and much more work has been accomplished than in previous years.

So many applications for entrance were received that in January a new class, numbering twenty-two, was organized. These pupils, however, were admitted upon the distinct understanding that nothing but cast drawing would be given them until September ; that the other studies in the course for first year work could not be recommenced, and that next fall they must take these subjects with the pupils entering at that time. This class, therefore, has given almost the entire time to charcoal work, varied by pencil drawing and a little perspective. The advanced students have been divided into two grades : the lower drawing from the antique, studying anatomy and working in color, and the higher drawing and modeling from life.

OPENING OF A LIFE CLASS.

In October life work was introduced as a regular feature of the school, and students were admitted to the class as soon as they showed requisite ability. For several weeks the head was drawn in charcoal and modeled in clay, the two mediums alternating week by week, thus ensuring study of form as well as of outline, and then for a similar length of time the figure was drawn, then the head again, and so throughout the year. Students who did not wish the study of clay, painted still life groups in oil while the others worked from the head. The work has been very satisfactory, and the students enthusiastic. Every week the students have been required to hand in sketches for criticism. The attention of the

first year students has been principally directed to picturesque subjects, perspective, broad effects of light and shade, and to simple handling; second year pupils have taken more advanced work, considered in its relation to illustration, and composition has been a special feature of the third year work.

AFTERNOON CLASSES.

The afternoon classes in the Regular Art Course have been in three divisions: one formed by the younger pupils, and called the children's class; another by older but still elementary pupils; and a third by the advanced. The children's class has made charcoal drawings of simple ornament from casts; a few masks have been attempted, easy perspective studies have been gradually introduced and explained; and toward the end of the year, pencil and pen and ink sketches, and a little color work of simple still life groups formed part of the regular class routine. The work has been very successful. The beginners' division has been principally engaged upon charcoal work from casts of ornament; but free hand perspective has been well started, and pencil sketches have been required. The advanced class has drawn from more difficult casts; has continued the study of perspective; and during the winter, a sketch club was organized, which met one afternoon every week to sketch from the costumed model. Sketching was greatly encouraged, and it became an important feature of afternoon work; but in the spring it was superseded by oil and water color, and home sketches in color took the place of the pencil and pen and ink sketches previously required. Quite a number of morning students entered this class to supplement their regular course by additional instruction, and the afternoon color class has come to occupy a prominent position in the art work of the school. In the evening class, the elementary students made charcoal drawings of casts in outline and in light and shade, and applied the rudiments of perspective to pencil drawings of simple still life groups, while the advanced pupils, in two divisions, gave almost their whole time to pen and ink sketching and to life work. Through the introduction of work from life the grade of evening work is greatly raised.

NORMAL ART CLASS.

There have been forty-three students in the Normal Art class, of whom twenty-nine were elementary, and four advanced. Those of the elementary who expected to remain two years gave their attention to cast drawing, free hand perspective, still life drawing, sketching, design, historic ornament, theory of color, and methods of teaching. The advanced students have taken more difficult charcoal work, sketching, model drawing, and methods of teaching, and also mechanical drawing, instrumental perspective, and clay modeling. Many of the elementary pupils came from other states, some resigning positions in order to study, and therefore they entered for only one year. These students have been exceptionally earnest and have grasped every opportunity that might enable them to complete the greater part of the two years' course in one. They have entered afternoon and evening classes as well as morning, and so have given much time to design and clay modeling, in the latter subject advancing to work from life. Several pupils who had studied before coming to the Institute have completed the full two years' course in one year. During the winter two students left the class and accepted positions which could not remain open until the completion of the course, and before graduation several others were engaged for September.

ARCHITECTURAL DRAWING.

The pupils of both the first and second year classes have followed the course of study in drawing and in text-book work. Plans, elevations and details of frame

and brick or stone houses have been drawn; free hand and instrumental perspective, isometric projection, intersection of solids and projection of shadows have been taken ; much attention has been given to design, and pencil and pen and ink sketching ; lectures on historic ornament and architecture have been attended and sheets of drawings, illustrating the various historic styles have been made. Recitations in "Building Superintendence" and lessons prepared from Rosengarten's "Architectural Styles" have been required. The work has been very thorough and practical and has met the approval of professional architects. The evening class enrolled seventy-two students in September, but so many others applied for admission that a second class was organized. Following the regular course, the elementary pupils made drawings of geometric solids, plans and elevations of frame house, details, geometric problems, etc. During the first term the advanced students drew plans and elevations of a house from a given sketch, and also supplied details. The second term they gave their entire time to the study of instrumental perspective. Nine of the pupils were employed in architects offices during the day and entered the evening class for advanced work, while others were preparing themselves for positions.

MECHANICAL DRAWING.

In this class all the students have been engaged upon the work of the first year. They have learned to read and make working drawings, have had practice in machine details, and in sketches and free hand drawings of the same. Much emphasis has been placed upon the development of surface and intersection of solids. The elements of mechanism and transmission of power have been commenced, and shafting details, the last subject of the year's schedule, have been included. The study of metallurgy has been carried on by means of notes, lectures, etc., supplemented by trips of inspection to manufacturing plants in the vicinity, and also to Bethlehem, Pennsylvania. The work of this first year, which was planned to conform to that in a modern drafting office, has been successfully accomplished, and the students are well grounded for the more advanced lessons of a second year.

In the evening class the elementary students took the study of geometric solids, geometric problems, working drawings, machine details, screws, bolts, etc.; development of surfaces, intersection of solids, and shafting details. The advanced students studied cams, gearing, engine details from models, *i. e.*, eccentrics, strap ends, and cranks, simple cases of slide valve action of steam engine, worked from model of universal chuck, and prepared detail drawings for the pattern-maker and blacksmith, and assembly drawings for the machinist.

APPLIED DESIGN.

The pupils in the class in design have worked all the year upon designs for prints, tiles, book covers, wall papers, rugs, carpets, stained glass, interior decoration, etc., rapidly advancing from one to another. One day every week has been given to the study of water color, home sketches for designs have been required, and test examinations have been given. Designs have been sold to manufacturers, and altogether the work of the class has been very successful. In January, an afternoon class in design was formed; twenty of the twenty-six members were students taking the normal art course, and consequently their work was especially adapted to public school teaching. The pupils were very enthusiastic, and accomplished a great deal in the time given. The evening students did a great variety of work, each doing that which was most helpful in his daily occupation. Home sketches for designs were required, and stronger work was the result. Color was employed and greater advance made than in other years.

WOOD CARVING.

The wood-carving students have carved panels, boxes, frames, easels, chairs, a chest, etc.; have taken the lectures and examinations on historic ornament; have given much time to original design in its direct relation to carving; and, on two days of each week, have received instructions in clay-modeling. The work has been better both in finish and style than that of the previous year. The afternoon class contained many normal pupils who are at liberty to take wood-carving if they choose—the subject being optional. The evening class was larger than ever before, and far better work was done.

CLAY MODELING.

The work in clay modeling has been carried on in several divisions. The elementary class, including the wood-carvers, has modeled from casts of ornament, etc., in relief and from casts of the figure in the round. The advanced class, composed of regular art students only, has modeled the head from life, alternating this work with charcoal drawing, and so acquiring a knowledge of both form and light and shade. The figure from life has also been attempted in clay, and class talks on bronzes and marbles have been given. The evening classes have been composed of normal art students and of artisans. The former gave the hours of day instruction to drawing, water color, etc., and during the evening modeled in clay, at first from ornament in relief, but finally, toward the end of the second term, studied the head from life. Others wishing work of more immediate help in their daily artistic work, studied ornament in its application to decorative purposes. A great advance was shown in the work over that of other years.

ART NEEDLEWORK.

The students in the art needlework class have worked samplers in flannel, linen, and lawn, and have applied the stitches so learned to tray cloths, doilies, table covers, draperies, etc., both in white and in color. Twice a week lessons have been given in design, and as far as possible students have originated the designs they afterward applied. The work of the afternoon students has been very similar to that of the morning, except that as only two lessons have been given each week less has been accomplished. A part of one afternoon has been given to the study of design. Evening is a poor time for embroidery, and even though the rooms are lighted by electricity, the work is trying and the effect of colors uncertain; beside, it is not a subject that many people would wish to undertake if they were busy all day; so, while the morning and afternoon classes have been large, the evening class has been small. The courses in needlework and in design have both been followed as closely as possible, but because of the few pupils in the class the evening work has not made a large showing.

The sales department connected with the embroidery department which was organized last October has met with very good success. Orders have been received for designs and completed work, and scarfs, school and lodge banners have been designed and embroidered. The work has been done by a professional designer and embroiderer, assisted by the most advanced pupils of the morning class. In addition, the best work of the students has been exposed for sale in show-cases in the class room.

TECHNICAL HIGH SCHOOL CLASSES.

All the pupils in the Technical High School have received instruction in drawing in the Art Department, and in addition the girls have taken wood-carving. The course in the latter subject covers two years, requiring two lessons every week for both first and second year pupils. The course in clay modeling covers three years, requiring

ing five lessons every week. Owing to the large number enrolled, the first year class was divided, and consequently five separate drawing lessons of periods of fifty minutes each have been given every day. During the first term, the first year pupils made free hand and instrumental working drawings; the second term, free hand drawings in the three divisions of free hand perspective, cast drawing, and design for common objects; and the third term, instrumental drawing. During the first term, the second year pupils attended lectures on historic ornament, and made illustrative drawings relating to architecture; the second term was given to architectural drawing. The third term the class was divided, the girls taking pen and ink work and the boys mechanical drawing. The boys in the third year class gave all three terms to advanced mechanical drawing and the study of mechanics, while the girls took a course in one of the art classes, the subject being optional.

DOMESTIC SCIENCE CLASSES.

The students in the day millinery and dressmaking classes have taken a parallel course in drawing under the direction of the Art Department. This course covers one year, and requires one lesson of an hour's length every week. Commencing with pencil practice and the study of cylindrical objects, untrimmed hats, and in perspective, the pupils are advanced to studies of drapery, sketches of hats and gowns, color, and original design, as related to artistic dress.

LECTURES.

Beginning March 18, 1891, a course of eight free lectures was inaugurated. These lectures occurred on successive Wednesday afternoons, from four to five o'clock, and specially related to the work of the Art Department. The attendance was so good, and the interest so great, that it has been decided to make this an important feature of the work for another year. The subjects given have been as follows:

"Drawing in European art and industrial schools"—Mr. W. S. Perry, Pratt Institute.

"Sculpture; Demonstration of the processes employed in the reproduction of sculptors' work in plaster, bronze, and marble"—Mr. H. S. Adams, Pratt Institute.

"Form study, drawing, and color in the kindergarten, and their relation to work in the public schools"—Miss Josephine C. Locke, Cook County Normal School, Chicago.

"Drawing in Normal Schools"—Mrs. H. J. Carter, College for Training of Teachers, N. Y. City.

"Progress of art education in America during the past twenty years"—Mr. J. S. Clark, Boston, Mass.

"Suggestions for teaching color in kindergarten and primary schools"—Mrs. M. D. Hicks, Boston, Mass.

"Historic costume"—Miss L. A. Fitch, Pratt Institute.

"The relation of art education to manual training"—Mr. C. R. Richards, Pratt Institute.

EMPLOYMENT.

Of the students who were graduated in June, 1890, nineteen were from the Normal Class; eleven of that number and six others who took a special course, have secured positions as teachers of drawing. Of the graduates and special students of June, 1891, nineteen have secured positions, making a total of thirty-six who are giving a part or all of their time to teaching. They are instructors in private, public, and normal schools, or supervisors of drawing in various cities and towns. Several students of this and of last year's classes have received employment as draughtsmen, or in offices as apprenticed designers and illustrators. Several have done special home work in wood-carving, or have, in some other way, utilized their knowledge to advantage.

The report of the Department of Domestic Science occupies seven pages. The general result is given in the opening paragraphs as follows :

The work of the Department of Domestic Science during the school year of 1890-91 has been encouraging and gratifying. The number of pupils taught has been larger than ever before, reaching 2,817, fifty-nine of whom came from other cities and towns. Of this number about four-fifths have been working and studying to make themselves more valuable in their home life, while the remainder have endeavored to become skilled workwomen. The growth of the department is also shown by noticeable improvement of the work, both in technique and in taste. Many letters have been received from pupils acknowledging their indebtedness to Pratt Institute for instruction which has been of great value to them.

During the entire school year there have been classes meeting in the morning in cooking, laundry work, sewing, dressmaking, and millinery ; in the afternoon, in cooking, household economy, hygiene and home nursing, sewing, dressmaking, and millinery ; and on Monday, Tuesday, Wednesday, and Friday evenings, during the spring term as well as in the fall and winter, in all branches except household economy. On Saturday mornings there have been classes in cooking, sewing, dressmaking, and millinery. The attendance in all of these has been excellent, reaching a higher average than that of last year. In the evening classes the attendance has quite equaled that of the day.

Teachers' meetings have been held twice a month, when reports from the various branches were read and the work fully discussed. These meetings have been a source of profit and encouragement, familiarizing the teachers with one another's work and the methods employed in other schools.

November 12, 1890, a lecture on Expression in Art, the teachings of Delsarte, etc., was given in the Assembly Hall by Mrs. Edmund Russell, and on November 19 one on Color, Dress, and Decorative Art was given by Mr. Russell. The lectures were well attended, and Mr. Russell aroused so much enthusiasm that a class of twenty was formed for a course of five lectures. In this course the following subjects were considered and discussed : Wall paper, carpets, hangings, pictures, ceramics ; form, color, texture, and jewels as applied to dress. On March 4, Mrs. Jenness-Miller lectured upon Artistic and Hygienic Dress to a large and appreciative audience.

As one result of above-mentioned lectures, a class in the Delsarte System of Physical Culture was formed, which was taught by Mrs. Streeter, of New York. These lectures were so successful that it is probable there will be a demand for similar instruction during the coming year.

As illustrating one of the practical applications of Drawing the following paragraphs is quoted from the same report :

DRAWING.

A larger proportion of dressmaking and millinery pupils than last year elected the course in free hand drawing, and the average attendance has been higher. In consequence, the interest of the pupils has been deeper, and the quality of the work much better. In fact, some of it has been excellent, and eleven students have completed the nine months' course with credit. Each class has received one lesson of one hour per week. More time and a room devoted to these classes are greatly needed. The value of the course in connection with the practical work is being more and more clearly demonstrated.

In the "Department of Commerce," phonography, typewriting, bookkeeping, and the English language were taught ; classes are to be opened the coming year in Spanish, arithmetic, and penmanship.

Instruction in phonography and typewriting was given in both day and evening classes throughout the year. The bookkeeping work was confined to three evenings per week for six months, while the class in English had but two evenings per week for three months.

* * * * *

The number of individual pupils enrolled was 129 for the day, and 181 for the evening, making a total of 310.

The report of the Department of Mechanic Arts is given in full. The apparent need for technical trade schools in this country, which, in the absence of apprenticeships, seem to furnish the only logical outcome of the popular demand for industrial training in the public schools, gives interest to the experiment initiated by Mr. Auchmuty, in New York, and to this definite attempt by the Pratt Institute, to send forth thoroughly trained workmen.

DEPARTMENT OF MECHANIC ARTS.

The work of the department has made important advances in certain directions during the year and, as a whole, has shown a steady gain in efficiency.

DAY TRADE CLASSES.

One of the most important features of the year's work has been the successful establishment of day trade classes in carpentry and machine work. These classes, which were started in October with two pupils each, had increased in April to twelve in each. The class hours have been from 9 a. m. to 5 p. m., except on Saturday, when the work stopped at noon. The aim in these classes has been not only to give the members a thorough knowledge of tools and methods, but by continuous day-by-day practice to make it possible for them to acquire a considerable degree of hand skill. The method pursued has been to make use of the regular shop courses as a skeleton, and to fill in with constructive work between the different stages. This latter work, for which the equipment and repairs of the buildings have furnished exceptional opportunities, has been the best possible practice, and has also been of great help in advancing the students' confidence and self-reliance.

Carpentry.—The carpentry class has in this way, besides a great amount of other work, framed and finished the large window in the studio, built four platforms for the Music Department, benches for tinsmithing equipment, clothes closet for machine tool room, four lathe cabinets, twenty-four drawing boards for the Art Department, frames, cabinets, and shelves for Steam and Testing Laboratories, tool house in tennis grounds, and has done almost the entire wood-working repairs and additions at the house No. 259 Washington Avenue.

Machine-shop work.—The machinists' class, during the same time, has made a number of milling cutters, drills, taps, reamers, and other tools needed for new work or to replace those broken or worn out, a geared boring bar, vises for milling and grinding machines, an hydraulic friction brake for Steam Laboratory, the brass work for a number of electrical measuring instruments, and has finished the twenty-four speed-lathes for the wood room.

Instruction and practice in drawing was given three times per week to both of these classes for three months, commencing February 11.

The progress of the carpenters is, of course, much more rapid than that of the machinists and less time is required for their school training. Of the six members of the former class who have left the Institute, all have reported as obtaining good situations with very fair wages.

EVENING TRADE CLASSES.

Carpentry.—In the house-building practice the class in carpentry advanced considerably farther than in the previous year. The partition which had before served as a basis for their work was enlarged into a model house, and a much greater variety of detail introduced. The reports received lately from several members of this class have been very encouraging.

Machine-shop work.—In the machine shop the number of second year students prevented the admission of a new class in January and severely tested the capacity of the equipment as it was. This undoubtedly represents the conditions of the future, and an increasing advanced class will require the time of one instructor, while another is engaged with the beginners. The character of the work was, as a whole, quite satisfactory.

Bricklaying and Plastering.—The bricklaying and plastering classes pursued the usual courses, except that in bricklaying more attention was given to walls and less to fireplace work.

Plumbing.—In the plumbing class considerable aid has been received from the use of the New York Trade School Manuals. These and the additional assistance of a number of charts prepared during the year have materially added to the value of the Wednesday evening lectures.

Painting.—The results accomplished by the painting classes during the year have laid a good foundation for future work in this branch, and the experience gained has allowed the different courses to be elaborated and defined. The interest of the Master Painters' Association has been unremitting throughout the year, and many expressions of satisfaction at the progress of the work have been received. The year's experience indicates that the most important future work in this section will be concerned with perfecting and advancing those already in the trade rather than in the training of raw material. All but one of the members of the fresco class have signified their intention to return next year, and with the exceptional facilities of the Art Department there seems to be every reason that this advanced class should develop into a strong feature.

SCIENCE AND TECHNOLOGY.

Geometry.—The varied character of the class in geometry, which has met on Tuesday and Thursday evenings, and the small amount of time at their disposal, necessitated considerable experimenting in order to determine the best means of instruction. The method adopted of dispensing with a text-book and having the class each evening copy into note-books the matter for the following lesson produced quite satisfactory results, but also required the expenditure of much time and labor on the part of both pupils and teacher, and can probably be superseded in the future by the use of a very elementary text-book. With a class composed of such varied material, many of whom have had absolutely no training in logical studies, the ground which can be covered in a single half year is very limited, but the results show that it can be covered with considerable thoroughness and with value to the students, both in relation to their regular work and to their habits of thought.

Chemistry.—The evening class in chemistry was composed of a thoroughly earnest and interested body of students. The plan of instruction devoted the first hour of each evening to a demonstration lecture, and the remaining hour to practice in the laboratory. This arrangement answered admirably except in the latter part of the course, where the need of a greater amount of laboratory time was felt. The lecture work covered a study of the elements and compounds of inorganic chemistry, with special bearing upon the applications of chemistry in manufacturing, while in the laboratory practice the properties and reactions of the different

substances were examined, and at the end of the term a few unknown solutions were qualitatively analyzed. As the time of a single course allows only an introduction to the practice of qualitative analysis, a second year's course would be necessary to deal properly with this subject, and in response to the unanimous request of this year's class, such a course has been arranged for the coming year.

Electrical construction.—The work of the class in electrical construction has been most gratifying. The interest of its members was aroused to a high degree from the first, and was sustained throughout the course. The work of the first term dealt with the scientific side of the subject,—the phenomena of magnetism and the electric current, while the laboratory practice took up the verification of the laws presented and the use of the different measuring instruments. In the second term, the operations and constructions of actual practice were studied, and the principles previously developed traced to their applications in the telephone and telegraph, dynamos, motors, and lighting systems. In this latter work, the new motors and dynamos proved of the greatest value.

Steam.—The class in steam, which was started at the beginning of the winter term, was composed of a small but earnest set of young men. The work in the class-room covered a study of furnace combustion, the physical properties of steam, the relation of heat and work in the engine cylinder, and an analysis of the details of engine and boiler construction. In the laboratory, practice was had in setting slide valve, taking indicator cards and computing performances from the same, and in making efficiency tests of both boiler and engines.

TECHNICAL HIGH SCHOOL.

The two sections of the First Year Class of the Technical High School pursued much the same course in bench-work, turning, and pattern-making, that has been previously followed. Several exercises were added to the turning course, solely for the purpose of bringing out more fully the appreciation of form in design, and the spinning course was arranged in a definite series or lessons which were successfully prosecuted. Beside the regular exercises in pattern-making, quite a number of patterns of a small engine were made by the most skillful of the pupils.

The shopwork talks given to this class were very considerably strengthened by the study given and material gathered during the previous summer, and have been of interest and profit to the students. These talks not only serve to make clear the principles involved in the shopwork, but by describing the growth of trees, their distribution, and the processes of lumbering, give an idea of the nature of wood, and the economic factors concerned in its distribution.

The Second Year Class passed successfully through the work in molding, tin-smithing, and forging. After the regular work in sand molding, casting in plaster from clay and metal originals was practiced, and the ancient and modern methods of statue casting described and illustrated by models.

In tinsmithing the course planned the year before was carried through, and some creditable specimens of pans, cups, and elbows produced.

In forging, the character of the results improved steadily throughout the year and very efficient work was reached before the close.

On account of the long delay in the receipt of the new lathes, the Third Year Class was prevented from finishing the final exercises of the machine tool course, but occupied the time in a number of exercises added to the filing course. The analytical work of this class in mechanicism, steam, and strength of materials was prosecuted under severe disadvantages in regard to time, but the results of the examinations held at the end of each term show that with better opportunities for study the subjects can be handled with entire efficiency. The subject matter, except in the case of steam, was given to the class in the form of cyclostyle notes, but with the experience of a year it is hoped that in the near future it may be possible to arrange the material in such definite shape that it can be printed.

AFTERNOON CLASSES.

But one afternoon class was organized this year, and by giving this class instruction on three periods a week throughout a year, a much more thorough course was accomplished than has ever before been possible with similar classes.

Three pages are given to the Music Department, which begins with the following summary:

MUSIC DEPARTMENT.

The past year has been an exceptionally busy one in the Music Department, and that good progress in all branches of the work has been made will be shown in this report.

Including the normal class, meeting daily, the Choral Society, the Select Choir, the Technical High School classes and chorus, there have been more than forty classes during the year. Last year the number of classes was seventeen.

NUMBER OF PUPILS.

The total number of pupils in the department classes has been 474, or 574, when the Technical High School is included. If the duplicate membership of Select Choir and High School chorus, as well as a number of associate members of the Choral Society be added, a total of considerably over 600, as compared with a total of 382 the previous year, is obtained.

Six pages are given to the report of the Library. The following extracts give a general view of the year's history, and with the table showing the amount and character of the circulation, must here suffice.

LIBRARY.

While the registration of a public library may be regarded as a test of its popularity, the circulation may be taken as a test of its usefulness, since to furnish three books to one person needing them is as good a work as to supply one book each to three persons. Judged by either registration or circulation, the past year has been successful beyond precedent in the brief history of the library.

3,765 new members have registered, bringing the total number up to 13,280, and there have been 558 renewals. 362 of the new borrowers are children under fourteen years of age. This, out of 891 new members, from April 18 to July 1, is a remarkable proportion, and shows how necessary it will be to consider hereafter the needs of children. The circulation for the past year has made phenomenal progress, from 98,909 to 148,865, a gain of 47,943 volumes, against a gain the previous year of 9,259.

The Astral Branch must have due credit for its share of this increase, having reached a circulation of 26,083 volumes. None of these figures include that part of the circulation which represents books lent for use in the Reading-room. At the main library, this amounted to 2,791 volumes, and at the Astral 1,038 volumes, while the number of visitors who consulted the periodicals in the Reading-room was 35,049 at the main library, and 23,425 at the Astral. The circulation from the Children's List up to July 1 reached a total of 2,323.

The character of the circulation among children under fourteen years of age has shown a tendency toward the books of modern authors concerning modern times, but travels and folk-lore have also been freely read. It has been found necessary to duplicate the list, as there were times when almost every book was out, and there was little possibility of choice.

The reasons for the past year's success are several. The Library has become better known as a free public library; new books in all classes have been provided,

containing the latest results of discovery and investigation in all lines, and have been diligently bulletined as well as displayed on the charging desk; the University extension lecture courses, and the Children's List have done their share; and the obliging spirit shown by the staff has had a favorable effect on borrowers. When it is realized that besides circulating nearly 150,000 books and giving out about 3,000 for reading-room use, the assistants have catalogued and prepared for the shelves nearly 6,000 volumes, and taken their turn in teaching classes, it will be seen that they have been industrious and capable as well as obliging.

The needs of the circulating department are several. Some one is needed in the loan-department to advise persons at a loss what to read, to instruct in the use of the catalogues and finding-lists, to watch and report the character of the circulation, and advise when duplicates are needed. This office might be called the Bureau of Information, and would soon be as valuable as the one in the Reference-room. Under the guidance of this assistant, persons might occasionally be taken to the shelves to look over the books of any special class which they wished to see. More room is needed, as the shelves are rapidly filling up. Many volumes of a reference nature have been removed during the year to the Reference-room, but their places have been speedily taken. The question of room is not a perplexity peculiar to this library, but troubles every library that contains the seeds of growth.

The Fiction Finding-list, which will be finished this month, will enable those who cannot come to the library to send for their books.

READING-ROOM.

The number of current periodicals to be found in the Reading-room is now 171 magazines and papers, not dailies, and eight dailies of New York and Brooklyn. Of these, thirteen are given, or sent by way of exchange, most of them being technical or professional periodicals. A decrease in the cost of some of our magazines was brought about by ordering the American reprints of certain English periodicals. These are paged like the originals, and the only drawback in using them is a slight delay in the delivery.

The posting of new lists, alphabetical and classified, has made clear to visitors the resources of the Reading-room, and the labeling of the racks is a great help in keeping the magazines in order. The attendance has amounted to 35,049 and 2,791 volumes have been given out for reading-room use. This attendance includes that in the Reference-room also, though the volumes used in the latter are not counted, access to the reference-shelves being allowed to the public.

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ANNUAL REPORT.

Circulation for the year 1890-'91.

	General Works.	Philosophy.	Religion.	Sociology.	Philology.	Science.	Useful arts.	Fine arts.	Literature.	Fiction.	Travels.	Biography.	History.	Total.
July	88	30	32	84	13	136	156	139	176	5,072	285	152	192	6,555
August	79	30	47	68	6	134	180	139	174	4,868	307	166	152	6,350
September ..	67	54	64	111	18	197	185	209	274	5,579	406	205	252	7,321
October	161	68	75	134	22	242	325	377	474	7,383	609	339	389	10,584
November	186	73	61	131	28	242	330	382	498	7,716	658	332	430	11,088
December	177	45	74	117	22	235	238	273	368	7,008	541	249	301	9,686
January	210	83	87	171	31	258	348	386	549	8,498	674	349	358	12,002
February	135	73	64	155	23	258	357	368	431	8,239	661	373	410	11,557
March	188	85	99	181	32	296	407	406	506	9,053	722	453	424	12,792
April	117	83	75	169	35	264	359	397	564	8,444	650	415	421	12,023
May	114	66	133	159	23	231	255	280	627	7,829	596	408	324	11,090
June	144	69	177	120	20	226	249	256	557	8,440	530	370	314	11,472
Totals ..	1,616	759	1,008	1,620	273	2,747	3,389	3,612	5,188	88,129	6,659	3,806	3,976	122,782

General statistics.

Circulation for home use	122,782
Circulation for reading-room use	2,791
Volumes added to shelves	5,969
Volumes sent for binding	1,456
Volumes mended	19,290
Fines	\$1,000.19
New members registered	3,785
Total registration to date	13,280
Visitors to reading-room	35,049

ASTRAL.

Circulation for home use	26,083
Fines	\$51.06
Total registration to date	1,213
Visitors to reading-room	23,425

The catalogue of the Pratt Institute for 1891-'92, is a handsomely printed and illustrated pamphlet of 101 pages; with views of the building, an impression of the Seal of the Institute, detailed plans of all the floors, and engravings showing the series of articles made in the regular courses of the wood and metal working shops. Full details of the courses in all the departments are given.

This catalogue differs from that of most educational institutions in that it omits the names of the pupils. It resembles in many respects the first descriptive pamphlet issued by the Institute, which is so largely quoted in the beginning of this account. Such quotations from the present catalogue as follow, are made to give opportunity to see how fully the plans and hopes expressed at the opening of the Institute have been realized; as well as to show the trend of its development in various new directions; and, also, to give the courses of study in the different departments in detail.

With the statistics of attendance, the prices of tuition, and the long list of Instructors, the latter in itself a striking evidence of the variety and extent of the educational activities of the Institute, this account of one of the most recent and most successful educational experiments must close.

The site and the buildings are described in the earlier pages of this account; the following from the current catalogue will show the additional buildings planned, and also, the organization of the teaching force, and the plan of Instruction, which now prevails.

NEW BUILDINGS.

Plans are in progress for the construction of two new buildings during the coming year. One building, 165 feet x 200 feet, and three stories high, is to be situated on the west side of Ryerson Street, opposite the Main Building, and is designed for an audience hall, with a seating capacity of 1,200, for a banqueting hall, for the Museum, for the Department of Music, and for the Library. The other building, 50 feet x 80 feet, and three stories high, is to be erected directly south of the Main Building, for the uses of the Technical High School Department. It will contain, in addition to class-rooms, a gymnasium for the department.

ORGANIZATION.

The Institute is under the control of a board of trustees, with a secretary as executive officer.

The work of the Institute is divided into departments ; the heads of the various departments constituting the faculty, each member of which is directly responsible for the work of his department.

Weekly meetings of the faculty are held, at which matters pertaining to the general interests of the Institute are discussed, and recommendations to the trustees are made. Department meetings are also held for the consideration of those subjects especially pertaining to the individual departments.

PLAN OF INSTRUCTION.

In most of the departments, morning, afternoon, and evening classes are held. In all these the character of the work is similar, though in the evening classes and in those day classes not meeting every day, courses are of necessity abridged.

Both sexes are admitted on equal footing to the privileges of the Institute.

As preparatory to the higher work of the Institute Schools,—for which it was found that the pupils applying were not at all qualified ; whether because the public schools did not give the requisite kind of training, or from whatever cause,—it was thought expedient to organize a Technical High School Department which now stands at the entrance and is the foundation of the educational system of the Institute.

TECHNICAL HIGH SCHOOL DEPARTMENT.

A THREE YEARS' COURSE FOR BOTH SEXES.

The Technical High School affords opportunity for such education as is given in the ordinary high school or academy, and combines with this, as an integral part of a symmetrical education, systematic courses in drawing and in various forms of manual work.

The training here given is in harmony with recent progress in educational thought which, without ignoring or antagonizing the education of the past, seeks to perfect this by supplying the elements heretofore disregarded. The new education does not endeavor to train a single set of faculties, but to develop harmoniously all the powers. It proceeds upon the supposition that the eye and hand should be educated no less than the brain, and that the training of the perceptive and imitative faculties is not only important but essential for true mental growth.

The Technical High School has the same aim as other high schools—to fit boys and girls for their life-work, whether that is to be in a business, industrial, or professional pursuit. It does not endeavor nor wish to prepare for a particular occupation or class of occupations in distinction from all others, but it does try to make its course as broad and general as is consistent with the age of the pupils and the time spent in its completion. Geometry and chemistry are introduced into the course, but not with the primary object of preparing teachers of mathematics or science ; so manual work is made a feature, but not in order to train carpenters or machinists ; on the contrary, the literary work and all forms of manual work are made parts of the course of instruction for one and the same reason—because of their disciplinary and educational value.

The school in which manual training is a feature has this decided advantage over others—that it gives students better opportunity for discovering any aptitude they may have for a particular vocation, inasmuch as it provides for the development not only of literary taste, but also of mechanical and artistic ability.

The course of study has been planned to meet the requirements, as far as possible, of those students who are preparing for advanced scientific, technical, or other schools, as well as of that larger class who expect to finish their school-room educa-

tion with the high school. It is the same, as far as literary work is concerned, for both boys and girls, but the manual work is entirely different throughout the course, and the drawing after the winter term of the second year.

COURSE OF INSTRUCTION.

First year.

Language English language. Rhetoric.
 Mathematics Algebra. Geometry.
 Science Physiology. Physical geography.
 Elocution.
 Vocal music.
 Supplementary reading.
 Physical culture.

Drawing { For boys and girls: Free-hand and instrumental working
 drawings; free-hand, model, and cast drawing;
 { For girls: Special work in drawing and design, in prepara-
 tion for wood-carving, millinery, and dress-making.
 Manual work { For boys: Bench work in wood; wood-turning; pattern-
 making; principles of molding.
 { For girls: Sewing, hygiene and home-nursing.

Second year.

Language General history and English history; or Latin. Essay-
 writing.
 Mathematics Geometry. Trigonometry. Book-keeping.
 Science Physics, with laboratory practice.
 Elocution.
 Vocal music.
 Supplementary reading.
 Physical culture.

Drawing { Fall and winter term: Perspective; architectural drawing;
 elements of design.
 { Spring term: For boys—Mechanical drawing. For girls—
 Pen and ink sketching.
 Manual work { For boys: Foundry molding; forging; tinsmithing.
 { For girls: Dress-making. Wood-carving.

Senior year.

Language English literature; Civil government. Political science.
 French or Latin. Essay-writing.
 Mathematics Principles of construction.
 Science Chemistry and metallurgy, with laboratory practice.
 Elocution.
 Vocal music.
 Supplementary reading.
 Physical culture.

Drawing { For boys: Advanced mechanical drawing; problems in
 construction.
 { For girls: Optional work in the Art Department.
 Manual work { For boys: Machineshop,—bench work; machine tool work;
 construction.
 { For girls: Cooking. Dress-making. Millinery

Seven pages are given to a detailed account of the work in the three courses in language, mathematics, and science, for the three years; the following four pages give in detail the parallel courses in drawing and manual work.

IV. DRAWING.

Parallel with the literary courses above given runs the the course in drawing, extending over the entire three years. All members of the department are required to do the same work in drawing up to the beginning of the last term of the second year, from which time the boys continue mechanical drawing, while the girls are given their choice of certain art courses—cast-drawing, modeling, design, etc.

The work in drawing is under the supervision of the Art Department.

First year.

- | | | |
|------------------|---|---|
| Fall term..... | { | 1. Free-hand working drawings of geometric solids, joints, etc. |
| | { | 2. Use of instruments—simple projections. |
| | { | 3. Working drawings to scale—sections, etc. |
| Winter term..... | { | 4. Outline-drawing from casts, and simple effects of light and shade. |
| | { | 5. Elements of design as related to common objects. |
| | { | 6. Free-hand perspective. |
| Spring term..... | { | 7. Clay-modeling. |
| | { | 8. Geometric problems. |
| | { | 9. Surface developments. |
| | { | 10. Intersection of solids. |

Second year.

- | | | |
|------------------|---|---|
| Fall term..... | { | 1. History of architecture and ornament. |
| | { | 2. Historic styles of architecture. |
| | { | 3. Elements of design as related to decoration. |
| Winter term..... | { | 4. Architectural drawing. |
| | { | 5. Lettering. |
| | { | 6. Perspective. |
| | | For boys: |
| | { | 7. Screws. Conventional and true methods. |
| | { | 8. Couplings. |
| Spring term..... | { | 9. Pulleys. |
| | { | 10. Pillow-block and hanger. |
| | | For girls: |
| | { | Pen and ink sketching. |

Third year.

- | | | |
|-------------------|---|---------------------------------------|
| | | For boys: |
| Fall term... .. | { | 1. Cams. |
| | { | 2. Forms of gear-teeth. |
| | { | 3. Geared wheels in combination. |
| Winter term..... | { | 4. Crank, strap end. |
| | { | 5. Eccentric, slide-valve action. |
| | { | 6. Assembly drawing. |
| Spring term... .. | { | 7, 8, 9, 10. Problem in construction. |
| | | For girls: |
| | { | Optional work in the Art Department. |

V. MANUAL WORK.

Manual work is a distinctive feature of the department. Whatever the nature of this work, and whether pursued by boys or girls, it is always arranged in systematic, graded courses, following a regular, logical plan.

The work for boys is under the direction of the Department of Mechanic Arts, and is as follows:

First year,

Fall term.....Bench-work: Use of tools, joinery; construction.
 Winter term.....Wood-turning: Straight, shoulder, and molded; center turning; chucking; inside turning; spinning simple bowls and cups.
 Spring term.....Pattern-making: Principles of molding; draft-halving; core-boxes; building up.

Second year.

Fall term.....Molding: Two-part molding; core-making; three-part molding; swept-up work; ornamental pieces in bronze.
 Winter term.....Forging: Management of fire; drawing; upsetting; forming.
 Spring term..... { Forging: Welding; making steel tools.
 { Tinsmithing: Soldering; sheet-tin work; brazing.

Third year.

Fall term.....Bench-work: Chipping; filing; fitting; use of taps and dies.
 Winter term.....Machine-tool work: Theory of cutting tools; turning; boring; screw-cutting.
 Spring term.....General toolwork; construction.

MANUAL WORK FOR GIRLS.

These courses are given only in outline. The complete courses correspond, both in respect of the work done and the methods employed, to those given in full under the Department of Domestic Science and Art Department, on pages 40, 45, 48, 49, 50, 52, 54, and 55, but are modified so as to bring them within the limit of time allowed in the High School, and so as to make especially prominent the educational nature of the work.

First year.

Fall term.....Sewing: First course—The various stitches and principles of hand sewing; making apron; talks on materials used.
 Winter term.....Sewing: Second course—Machine stitching; drafting, cutting and making skirt and under-waist.
 Spring term..... { Sewing: Second course finished—Drafting, cutting, and making cambric dress.
 { Hygiene: First and second courses—Methods of treatment in sudden illness and accidents; care of the sick.

Second year.

Fall term... ..Dress-making: Drafting skirt, waist, and sleeve. Wood-carving.
 Winter term.....Dress-making: Talks on choice of materials, color, and form; cutting and making skirt and drapery. Wood-carving.
 Spring term.....Dress-making: Cutting and making waist. Wood-carving.

Third year.

Fall Term	{ Millinery : First course—Methods of making and trimming various shapes of large hats in practice materials. Cooking : First course—Making fire ; care of utensils ; soup making ; boiling, stewing, broiling ; instruction upon the chemical and nutritive properties of foods.
Winter Term.....	{ Millinery : First course—Instruction in selection of materials, in color and form ; principles applied in a hat of good materials ; methods of making bonnets in practice materials. Cooking : First course—Bread, pastry, cake ; frying, sautéing, roasting ; table-serving and marketing.
Spring Term	{ Millinery : Second course—Methods of making toques in practice materials ; principles applied in a bonnet and toque of good materials. Dress-making : Second course—Cutting and making dress from original design. Household economy : Talks upon the application of scientific methods to practical house-keeping.

REQUIREMENTS FOR ADMISSION.

Candidates for admission to the First Year Class must, except in special cases, be at least fourteen years of age, and must pass a satisfactory examination in arithmetic, algebra, as far as to simple equations, (including factoring, greatest common divisor, least common multiple, and fractions), geography, United States history, grammar, and spelling.

Generally a pupil who has graduated from the public schools, or who has pursued an equivalent course of study elsewhere, will be prepared to enter this department, and occasionally those from a lower grade have been able to pass the required examinations.

All candidates are expected to present, at the time of examination, a certificate of good moral character from the principal of the school which they last attended.

Applicants for advanced standing will be examined upon the preparatory studies above named, and also upon the work which has been done by the class to which they desire admission.

Classes are regularly admitted at the beginning of the Fall term in September ; but pupils will be received at any time if they are prepared to enter classes already existing.

Entrance examinations will be held on Saturday and Monday, June 20 and 22, and on Wednesday and Thursday, September 16 and 17, 1891. Candidates are expected to be present on both the appointed days, either in June or in September.

DIPLOMA.

Students who satisfactorily complete all the required work of the course, both literary and manual, and who maintain a good character throughout their connection with the school, will receive the diploma of the Institute.

DAILY SESSION.

The hours of session are from 9 a. m. to 3 p. m., with an intermission of half an hour for luncheon.

The day is divided into seven periods, of which three are devoted to recitations, one to study, one to drawing, and two to manual work.

Students are obliged to make nearly all the preparation for recitation at home, and not less than three hours daily should be set apart for this purpose.

EXPENSES.

In addition to tuition fees, the amount of which is given on page 97, students are required to provide their own books, drawing instruments and materials, clothing, for use in shops, and, in the case of girls, most of the materials needed for the work in sewing, millinery, and dress-making. All tools and materials required for work in the shops are furnished by the school.

TEXT-BOOKS.

English	Lockwood.	Physics	Avery ; Chute.
Algebra	Sheldon.	Book-keeping...	
Physiology	Hutchison.	Trigonometry...	Wentworth.
Physical geography...	Appleton.	English literature	Backus & Browne.
Geometry	Wentworth.	Civil government	Macy.
General history	Swinton.	Chemistry	Shepard ; Appleton.
English history	Stone.	French	Whitney ; Bocher-Otto.
Latin	Jones ; Harkness.	Political science.	Walker.
Cæsar	Harkness.		

The thirteen pages of the catalogue which are devoted to the Art Department here follow. On comparing the first plan of this department as quoted from the first statement made by the Institute as given in the opening pages of the present account; it will be seen that in this, as in each of the other departments, the four years of actual work have resulted not only in an increase in the variety of subjects of instruction but, also, in a re-arrangement of the programs of work required, which now show minute attention to details and present better defined courses of study.

The practical value of the opportunity thus afforded for the comparative study of methods has led to giving here such extended statements notwithstanding the increased space required and the danger thereby incurred of repetition.

The fact which justifies the present Report, namely: that all attempts to introduce training in Industrial Arts and in the Fine Arts, into the public schools and other general public institutions of learning throughout the United States, are, as yet, but experiments;—has led the writer, as stated in the opening chapter of this volume, to give at such length both the courses of study pursued in the different schools and classes recorded in this Report, and also the statements made by the Originators, Instructors, and Patrons, of the several institutions, in order that the material requisite for intelligent

judgment both as to the expediency of establishing similar institutions elsewhere, and the adoption of one or another courses of instruction and methods of management may be available.

It has, therefore, been thought better to enter thus minutely into the history and methods of the few typical institutions here recorded, than to give briefer accounts of a larger number of schools; many of which could convey no special lessons, being not individual but only servile copies of other models.

The visitor to the Pratt Institute finds himself at once as he enters the hall and makes his way up the stairs, in an atmosphere of art; for, everywhere, his eye rests on well framed photographs of examples of the best work of the world's architects and artists, collected by Mr. Perry, the principal of the Art Department, during a recent European tour undertaken in the interests of the Pratt Institute.

In the previous volume of this Report the examples set by the Girls' High School of Boston, under the inspiration of Mr. C. C. Perkins, and his friends; by the Maryland Normal School, in Baltimore, under the guidance of Professor M. A. Newell, then principal of the school; by the High School and the Franklin School Building of Washington, D. C., when under the guidance of Superintendent J. Ormond Wilson, were referred to, as showing how good taste and a love for Art might be cultivated among public school children at little cost; and, not alone in costly city school buildings, but in remote country school houses; if, only, the desire and the knowledge existed on the part of the teachers.

Besides the numerous photographs, drawings, and the valuable collections of other Art objects, which are retained for definite use in the Art Department; Mr. Perry, by this happy expedient of hanging his walls with Art, has thus filled the whole building with an atmosphere of culture and refinement which serves to idealize and ennoble all its purposes and can hardly fail, even though unconsciously to themselves, of influencing all who enter its halls.

The following is the official statement of the Art Department as contained in the current catalogue of the Pratt Institute for 1891-'92.

ART DEPARTMENT.

The object of the Art Department is to give thorough instruction in free-hand drawing and color, architectural drawing, mechanical drawing, technical and decorative design, clay modeling, wood-carving, and art needle-work; and also to provide the best facilities for the training of teachers of industrial art.

The department occupies the entire fourth floor, half of the sixth, two rooms on the fifth, and one room on the third floor of the Main Building, comprising in all fifteen studios and rooms especially fitted for the requirements of the various classes. Seven rooms are occupied by the classes in architectural and mechanical drawing, wood-carving, water-color design, and art needle-work; four studios with north light, are used by the elementary classes for light and shade drawing,

and for clay-modeling; and the large Art Hall on the upper floor, lighted from the roof, is arranged for advanced work from the antique and from life. Class lectures are given in a small lecture-room, while general department lectures are given in the main Assembly Room of the Institute.

The department is supplied with a large collection of casts of ornament and the antique; a number of sketches by the old masters; a set of original drawings, for illustration, by modern artists; a series of several hundred photographs arranged in chronological order, illustrating the historical development of art; photographs illustrating landscape composition; also large numbers of designs and charts for class use. Students have access daily to the collections of pottery, porcelain, bronzes, laces, embroideries, etc., in the Technical Museum, and also to the Institute Library which contains a large and excellent selection of books on all subjects relating to art.

The department provides drawing-boards, easels, wood-carving tools, and modeling clay; but paper, drawing materials, instruments, and wood for carving must be furnished by the students. With few exceptions these materials may be obtained at the General Office of the Institute.

The school is planned for those who wish to pursue, thoroughly and systematically, any branch or division of art work, and the courses of study are arranged to meet the requirements of three classes of pupils; those who give to the work five days each week; those who give but two or three afternoons; and those who give but three evenings. Students are not allowed to omit any part of a course of study unless they can present similar work, and pass satisfactory examinations upon the same. Promotions depend entirely upon individual ability and application, but every student is expected to perform all class-work. The work of the classes is under the control of the department until after the annual exhibition; one or two specimens may then be selected from the work of each student and retained for the use of the school.

A certificate will be granted to students who successfully complete a prescribed course of study, attend all lectures, and pass all test exercises and examinations.

MORNING CLASSES.

The morning classes are for those who can give five days each week to study, and who wish to pursue a regular course of two years or more in any branch of work given in the prescribed courses. Before final enrollment, applicants for admission to the Art and Normal classes, and to the classes in Architectural and Mechanical Drawing and Design, must pass an examination in free-hand drawing. In addition, applicants for the Normal course must be more than sixteen years of age, and must present a satisfactory statement, letter, or certificate, in regard to general scholarship; and applicants for the day classes in either Architectural or Mechanical Drawing must pass the additional examinations mentioned on page 37.

All regular courses of the morning classes begin in September. The daily session is from 9 a.m. to 12:45 p.m., with an intermission of fifteen minutes at 11 o'clock. Promptness and regularity of attendance are absolutely insisted upon. Students may work in the studios in the afternoon, if the rooms are not occupied by other classes.

AFTERNOON CLASSES.

Afternoon classes in free-hand drawing and color, wood-carving, applied design, and art needle-work, are for the accommodation of students who find it impossible to attend the morning session. The hours of instruction of each class are from 2:30 to 5:00 o'clock on two afternoons of every week during the school year. Classes for teachers and pupils from public and private schools meet at 3:30 o'clock.

The courses of study are similar to those of the morning classes, but of necessity are abridged. Every effort, however, is made to adapt the work to the needs of the individual pupil. (See Regular Art Course, Courses in Wood-carving, Art Needle-work, and Applied Design.)

EVENING CLASSES.

Evening classes, for the accommodation of those who are engaged during the day, meet Monday, Wednesday, and Friday evening of each week, for six months, from September to April. The session is from 7:30 to 9:30 o'clock.

Classes in free-hand drawing, architectural drawing, mechanical drawing, decorative and applied design, clay-modeling, and wood-carving, pursue courses of study, similar to those of the day classes, but on account of the limited time these courses are less comprehensive. The work in free-hand drawing is carried on in several divisions. Students filling an application blank should specify which division they wish to enter. During the winter a course in one of the subjects mentioned on pages 73 to 75 may be taken in connection with either architectural or mechanical drawing. The work of every class is made as helpful as possible to students having a special end in view.

(For more specific statements in regard to the various courses of study of evening classes see pages 34 to 40.)

ADDITIONAL CLASSES.

Pupils from the Technical High School Department meet for instruction one hour each day, and pursue a course of study in free-hand, architectural, and mechanical drawing, design, clay-modeling, and wood-carving, as given in the prescribed three years' course of study of that department (pages 24 and 25).

Students in the day millinery and dress-making classes of the Department of Domestic Science receive one lesson each week in free-hand drawing and color, the work enabling them to sketch drapery and various combinations of material in a free and effective manner.

LECTURES.

In addition to the courses of public lectures, referred to on page 14, free lectures, extending through several months of the school year, occur weekly, upon the same day and at the same hour. The subjects are of especial interest to students in the various classes of the Art Department.

COURSES OF STUDY.

All courses of study here printed are first given complete as planned for and carried out by morning classes, which meet five days each week. All other classes meeting for a shorter time pursue similar but abridged courses, and full information will be found in the following pages concerning each division of art work of both day and evening classes.

REGULAR ART COURSE.

[Five days each week—four years.]

The Regular Art Course is for those who wish thorough training in light and shade drawing, color, perspective, etc., with work from the antique and from life. Many drawings are required under each subject of the course of study, the number depending upon individual ability and application. Examinations and test exercises are given from time to time, and when students have become proficient in any line of work they may proceed to the next. Each student may advance as

rapidly as time and ability permit, and all students, including those from other schools, are admitted to the life classes whenever they can present satisfactory drawings from the antique.

The work as planned in the course of study is for four years, but students wishing to give all day to drawing have the opportunity to finish in three years.

During the first year, students spend three consecutive mornings each week upon light and shade drawing; the fourth morning is devoted to free-hand perspective, and sketching, and the fifth, by means of lectures, drawing, etc., to the history and development of art.

Students having completed the first year's course will be admitted to the life class whenever their drawing from the antique will justify such admission. Students of the second year's class are also required to pursue a parallel course in oil color, as a further aid in the study of values, and as a necessary preparation to study from life in color. The study from the antique may be either in charcoal or clay, or both, and all students preparing for the life class, and while drawing from life, are advised to study a part of the time in clay, to gain more accurate knowledge of the form and action of the human figure.

The work of the third and fourth years is a further development of that of the second year, and during the fourth year, or as soon as the student becomes proficient in drawing, color is substituted for charcoal in life work.

Each week throughout the course students are required to hand in sketches for general class criticism. During the first year the study is directed principally to the choice of picturesque subjects, to perspective, broad effects of light and shade, and to the handling of simple mediums. In more advanced work, sketching is considered in its relation to illustration and composition. Students of the advanced classes also meet two afternoons every week to sketch from the costumed model.

In connection with the courses of study, lectures are given on the following subjects: Perspective, Design, Harmony of color, Historic ornament, Artistic anatomy, and the History of painting.

Course of study.

FIRST YEAR.

1. Cast drawing from ornament in outline, and light and shade.
2. Cast drawing—masks, heads, and details of human figure in outline and light and shade.
3. Free-hand perspective, perspective problems, and sketching.
4. Still life groups in light and shade.
5. Historic ornament.
6. Principles of design and decoration, illustrated in color.

SECOND YEAR.

7. Study of antique in light and shade, or clay.
8. Study of artistic anatomy.

9. Sketching and drawing from costumed figure.
10. Painting in oil or water color.

THIRD YEAR.

11. Drawing from life, head and costumed figure. (Clay-modeling optional.)
12. Figure from life. (Clay-modeling optional.)
13. Painting in oil color.
14. Sketching and composition.

FOURTH YEAR.

15. Painting from life, head and costumed figure.
16. Figure from life. (Clay-modeling optional.)
17. Sketching and composition.

AFTERNOON CLASSES.

The regular art class, covering a course abridged from that printed for the morning class, meets two afternoons each week for instruction and practice, and a third afternoon for practice alone. Students wishing to pursue a regular course draw from casts until able to enter the life class, taking a parallel course in free-hand

perspective, sketching, and anatomy. Each week, throughout the course, students are required to hand in sketches for class criticism, and a sketch club for rapid sketching from the costumed figure, meeting one afternoon each week, is open to all students of the advanced classes.

The life drawing from the head and costumed figure is carried on from September to March. From the first of March to the end of the school year, work in oil or water color takes the place of life drawing. To be admitted to either the life or color classes students must satisfactorily complete all work of the elementary classes, or present drawings covering the same.

EVENING CLASSES.

The work in free-hand drawing is carried on in several divisions as follows: (1) drawing from the antique and the head from life; (2) freehand perspective and still life drawing; (3) free-hand perspective and pen and ink sketching; (4) free-hand drawing and applied design in color; (5) drawing and modeling from cast and life. Students filling an application blank should specify which division they wish to enter. Students may enter the life class, or the class in pen and ink drawing, upon the satisfactory completion of the work of the elementary classes, or by presenting satisfactory drawings done elsewhere. Drawing from life of the head and costumed model will extend throughout the first and second terms, and modeling from life, throughout the second term.

NORMAL ART COURSE.

[Five days each week—two years.]

The Normal Art Course of two years aims to give pupils a training which shall qualify them to fill positions as teachers and supervisors of drawing in public and private schools.

The course of study comprises the first year's work of the Regular Art Course, including sketching, and the lectures on Perspective, Harmony of color, Historic ornament, and Design, together with the subjects printed below. The work in normal methods extends throughout the two years.

Course of study.

- | | |
|---|---|
| 1 to 6. Same as Regular Art Course. | 11. Elements of architectural and mechanical drawing. |
| 7. Study of plant forms and their adaptation to ornament. | 12. Instrumental perspective. |
| 8. Applied design in color. | 13. Normal methods. |
| 9. Clay-modeling. | 14. Teaching exercises. |
| 10. Water color. | 15. Wood-carving. (Optional.) |

After completing the two years' course, the students may take an advanced special course and become qualified as instructors in higher grades of work.

Students may also do extra work as time permits, covering as much as possible under the second and third years of the regular art course. The afternoon and evening sessions furnish opportunity for this additional work, and students taking evening work in clay-modeling may model from life the second term, if the work of the first term meets the requirements necessary.

Exceptional opportunity is furnished to young men who wish to qualify themselves to fill positions as instructors of drawing in manual training schools, etc. The work may include four divisions: (1) free-hand drawing, clay-modeling, and design; (2) architectural drawing; (3) mechanical drawing; (4) shop and laboratory practice.

CLAY-MODELING.

Arrangements have been made so that the work in clay-modeling shall be a special feature of the department. The wide extent to which clay-modeling can be directly used in the fine and the applied arts has justified a particular effort in this direction.

The work of the classes in clay-modeling is in four divisions :

1. The first is intended to supplement free-hand drawing from the antique and from life, and to provide training for those who wish to make a specialty of advanced work in clay. Pupils begin by modeling in relief, then in the round, and advance to study from life. Students who wish to enter at once upon work from the figure are required to present satisfactory drawings or modeled studies of the head or figure.

2. The second is for pupils of the Normal class who are instructed in the modeling of type forms, ornament, etc., and are otherwise prepared to teach elementary clay work in connection with drawing in the public schools. Students model from casts, design for relief ornament, and, when their progress warrants it, model from life.

3. The course of the third division is planned to meet the requirements of pupils in the Architectural and the Wood-carving classes, and also those of the Technical High School. Students model from casts, and study from plants, photographs, etc., the principles of decorative design as applied to stone, wood, and metal work.

4. The fourth division is for pupils of the evening classes, and the course is designed to give artistic training which shall be especially adapted to meet the needs of artisans and designers in silver, brass, iron, stone, wood, and the numerous other branches of manufactured work to which modeled ornament is applicable. Students take a preliminary course in free-hand drawing, design, and modeling from casts, and then advance to the particular line of ornamentation in which they desire special training. The course will include the principles of form and proportion involved in designs of various kinds, and the adaptation of modeled ornament to different surfaces.

Students of the evening classes who can present work showing necessary qualifications may enter at once upon the study of the antique, and of the head from life in clay.

ARCHITECTURAL AND MECHANICAL DRAWING.

[Five days each week—two years.]

These two courses of study, which are entirely distinct, aim to equip the students as thorough and practical architectural or mechanical draughtsmen, and to furnish them also with practical knowledge of building or machine construction.

With the school year 1891-92 a new departure will be made in both the Architectural and Mechanical drawing classes. The courses will occupy both the morning and afternoon sessions. The morning session of each class will be devoted to drawing, and the afternoon session to shop work and laboratory instruction. It is believed that there is a demand for courses of study which shall include not only the draughting of structures of wood and iron, but also the study of methods of construction, the properties of materials, and their behavior under strain. The equipment of the shops and laboratories offers unusual facilities for carrying out such courses. Students not only will become acquainted with the properties of materials, but will also learn to apply this knowledge in building and machine construction.

In addition to the drawing and laboratory practice, regular recitations will be held in mathematics, and in other subjects connected with the two courses of study. The work pursued in each class is given under the courses of architectural and mechanical drawing, which follow below.

Candidates for admission to either the morning architectural or mechanical drawing classes must be at least fifteen years of age, and must pass an examination in free-hand drawing, arithmetic, and spelling, and must also be able to write, freely and correctly, dictated selections of good English composition.

At the time of examination all candidates are expected to present a certificate of good moral character from the principal of the school last attended.

Entrance examinations will be held in June and in September.

ARCHITECTURAL DRAWING.

Course of study.

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| 1. Geometric solids, plans, and elevations. | 10. Construction of arches, buttresses, etc. |
| 2. Geometric problems, surface developments, and intersection of solids. | 11. Plans and elevations of brick or stone house. |
| 3. Framework, joints, etc. | 12. Sections of house, and details |
| 4. Sections through partitions, doors, and windows. | 13. Staircase and details. |
| 5. Plans and elevations of cottage. | 14. Fireplace and details. |
| 6. Framing plans of cottage. | 15. Original designs for frame house,—plans, elevations, and perspective. |
| 7. Details of frame house. | 16. Original designs for brick or stone house,—plans and elevations. |
| 8. Scale drawings of buildings from measurements and sketches. | 17. Original designs for various details. |
| 9. Construction of foundations, chimney, etc. | 18. Problems in constructions. |
| | 19. Problems in design and composition. |
| | 20. Problems, strength of materials, etc. |

Students also take a parallel course in free-hand and instrumental perspective, pen and pencil sketching, design, clay-modeling, mathematics, methods of building construction, history of architecture, etc.

Shop and laboratory practice.—During the first year, practice will be given in joinery, framing, and details of house building. In the second year, the processes and materials employed in masonry, plastering, plumbing, and house painting will be studied, and practice given in the testing laboratory upon the strength of materials.

An advanced post-graduate course of one year in draughting, designing, clay-modeling, and water color, is open to those who successfully complete the two years' course.

MECHANICAL DRAWING.

Course of study.

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| 1. Principles of working drawings, simple projections, and use of instruments. | 10. Pillow block and hanger. |
| 2. Geometric problems. | 11. Cams. |
| 3. Machine details from models. | 12. Gearing. |
| 4. Machine details from sketches. | 13. Crank. |
| 5. Screws, bolts, and nuts. | 14. Strap end. |
| 6. Free-hand working drawings. | 15. Eccentric. |
| 7. Development of surfaces, and intersection of solids. | 16. Slide-valve action. |
| 8. Pulleys. | 17. Assembly drawing. |
| 9. Couplings. | 18. Shop drawing. |
| | 19. Distribution of power. |
| | 20. Problems in construction,—machine design. |

Students also take a parallel course in free-hand drawing, perspective, design, mathematics, elements of mechanism, theory of steam engine, metallurgy, strength of materials, etc.

Shop and laboratory practice.—Instruction will be given the first year in joinery, turning, pattern-making, and molding. The second year will be devoted to forging and machine-shop work, and to practice in the steam and testing laboratories.

EVENING CLASSES.

The complete courses of study, which cover two years, are planned to meet the wants of those who wish to learn how to make and to read drawings relating to house or machine construction. With the exception of the parallel courses, the work of the evening classes includes much of the course of study printed for each of the day classes. One of the subjects mentioned on pages 73 to 75 may be taken in connection with the work of the second year. Applicants should state definitely which of the two classes, architectural or mechanical, they wish to join.

APPLIED DESIGN.

[Five days each week—three years.]

The course in design provides thorough instruction in the principles of decorative design, and in the technical methods of practical application, and aims to fit pupils to become professional designers. Pupils having acquired proficiency in the underlying principles of all good design may make a specialty of any one subject. By working afternoons, students have the opportunity to complete the course in two years.

The course of study for the afternoon and evening classes contains as many of the subjects printed below as are necessary to secure good drawing and an understanding of the general principles of decoration. The work of the evening classes then becomes of the special character most helpful to those students who wish to supplement their daily occupation by study of the principles of design as applied to different materials.

Course of study.

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|---|--|
| <ol style="list-style-type: none"> 1. Free-hand drawing. 2. Elements of ornament. 3. Skeleton plans and pattern analysis. 4. Original designs in outline from given motives. 5. Preparation of colors, and harmony and contrast of color in applied designs. 6. Original designs in color for tiles, etc. 7. Original designs in historic styles, in color. 8. Study of plant forms and their adaptation to ornament. | <ol style="list-style-type: none"> 9. Foliage from nature in flat washes of color. 10. Original designs in color from plant forms. 11. Designs for prints, book covers, etc. 12. Designs for wall-papers. 13. Designs for carpets. 14. Decorative designs and schemes of color for rooms. 15. Problems in decoration. |
|---|--|

WOOD-CARVING.

[Five days each week—three years.]

The course in wood-carving meets the needs of those who desire not only a knowledge of the handling of tools, and of technical methods in wood-carving, but also a knowledge of free-hand drawing, design, clay-modeling, and the principles of good construction. By working afternoons, students have the opportunity to complete the course in two years.

Beginning with surface carving for some simple object, the pupils advance to frames, panels, cabinet work, and furniture, originating and applying their own designs. The students may also take a course in light carpentry or cabinet work.

The afternoon and evening classes are especially designed to accommodate students of the Normal class, teachers and pupils from other schools, and those students who cannot pursue as comprehensive a course as is planned for morning classes.

The parallel course in drawing is necessarily abridged for pupils in the afternoon and evening classes.

Course of study.

1. Preliminary exercises; care and use of tools.
2. Plane and curved surface carving.
3. Diaper carving.
4. Horizontal and vertical lines of decoration.
5. Incised model carving,—conventional and naturalistic treatment.
6. Low relief, half relief, high relief,—flat and curved surface,—conventional and naturalistic treatment.
7. Letters and inscriptions.
8. Cabinet work in historic styles.
9. Sculptured ornament,—conventional and naturalistic treatment.
10. Use of oils, stains, and varnish in finishing woods.

Students will pursue the following parallel course of study :

1. Free-hand and mechanical drawing.
2. Elements of ornament, lines, geometric forms, leaves and flowers, and their use in decoration; original designs for surface covering, and borders.
3. Historic ornament and original designs in historic styles.
4. Drawing from plant forms, and adaptation of plant and animal forms to ornament.
5. Clay-modeling.

ART NEEDLE-WORK.

[Five days each week—two years.]

The object of the course is to teach the principles and methods of art needle-work, and at the same time to cultivate artistic feeling and judgment in the choice of design, color, or material, in articles for home decoration.

By giving additional time, or by taking a post-graduate course of one year, students of the two years' course are able to qualify themselves as teachers, or as supervisors of all kinds of art needle-work.

The course includes free-hand drawing, and that work in embroidery which best illustrates the principles of design in decorative needle-work. Pupils are required to work the different stitches upon samplers, and afterward to apply them to special pieces of embroidery, for which they make their own drawings. As pupils become familiar with the various stitches, and learn to draw and to adapt designs easily, they may make a specialty of any one class of work. Talks are given on historic ornament, and the use of various materials as applied to general house decoration. Students entering the morning classes must be at least sixteen years of age, and must be able to sew neatly. The afternoon classes which meet for two lessons each week are for students whose time is limited, or who cannot pursue as comprehensive a course as planned for morning pupils. Children who can sew neatly, and who can do the work necessary for a just appreciation of the subject, will be admitted to the afternoon classes.

Special arrangements have been made whereby orders can be filled for original designs and all kinds of embroidery, samplers, etc. The designs may be furnished

with materials ready for completion, or the entire work may be done in the department. In addition, the best work of advanced students is exposed for sale in showcases in the main room on the fifth floor.

Course of study.

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| 1. Flannel work. | 6. Tapestry staining and outlining. |
| 2. Tapestry stitches. | 7. Appliqué, on-laid and under-laid. |
| 3. Spanish laid-work. | 8. Drawn work, Roman lace, and lace stitches. |
| 4. Laid-work, scallops and initials. | 9. Bullion work. |
| 5. Kensington work—solid and half-solid. | 10. Ecclesiastical work. |

The parallel course in drawing includes free-hand drawing, historic ornament, use of natural and conventional forms, lettering, and design applied to various kinds of art needle-work.

"The Department of Domestic Science" comprises practically a series of Trade Schools for Women. It is so marked and peculiar a feature of the Pratt Institute, in which this newcomer differs widely from the other institutions with which it is here grouped, that the thirteen pages of the catalogue are here given in full, except of course the engravings of the floor plans, which in the catalogue accompany the description of the facilities furnished.

It will be observed later in this Report that Departments of Domestic Science are connected with one or two institutions in Western cities, but such a comprehensive department is a new departure in the East, where, however, in the cities, separate Cooking Schools, and Schools for Training Nurses, are somewhat common; and where in some places, as for instance in Washington, D. C., lessons in cooking and in sewing, are given to girls in some grades of the public schools, just as lessons in Manual Training are given to the boys in the same grades.

The possible soon-coming demand for public Trade Schools for both young women and young men, after graduation from the present public schools, leads me to give space for this interesting experiment which seems to have been very successful. This class of schools are designed to offer that opportunity for youth to learn bread-winning employments which the public schools have not hitherto afforded; and entrance to which the graduates from American public schools find now almost impossible, since apprenticeship to trades is largely a thing of the Past, and Trade Unions antagonize the eager American aspirants; though little restraint is placed on the immigration of European youth trained in skilled labor.

This condition which now confronts the older American communities must, it would seem, if no other solution is found, sooner or later compel the establishment of public Trade Schools for the training of American youth of both sexes in the knowledge and practice of skilled industries. The motives which led to the preparation of the two previous volumes of this Report, impel, then, to the

admission here of this official program of this department of the Pratt Institute; because, here, the experiment is being tried on a sufficiently large scale to furnish the data which will be needed whenever the public shall be forced to consider the practicability of establishing similar supplementary Schools of Industry.

DEPARTMENT OF DOMESTIC SCIENCE.

Training in the domestic arts is physically, mentally, and morally beneficial. The noblest task a woman has given her, and one requiring the cultivation of all her powers, is the right management of a home so that it may become the power for good that it was designed to be. An intelligent knowledge of any subject will elevate the work itself, and lead one to a just appreciation of those who devote themselves to it. It is the purpose of the Department of Domestic Science to afford girls and women opportunities for such training as will best supplement the education usually gained in their school life, and better prepare them to make home-keeping the high art that it should be. To this end, courses of instruction in cooking, household economy, laundry-work, hygiene and home-nursing, plain sewing, millinery, and dress-making have been established; they have been systematically graded, not only to insure a thorough knowledge of the subject, but to impress upon the pupil the value of order, accuracy, economy, and logical sequence. The methods of instruction are such as lead pupils to grasp the artistic and scientific principles underlying all good work, and encourage them to observe and judge for themselves, thereby gaining self-reliance.

The courses of study are designed to be so thorough that those who successfully complete the advanced work in any department, except that of hygiene and home-nursing, may possess the theoretical and practical knowledge requisite to enable them to become skilled workwomen when the necessary experience has been gained. The names of such pupils are furnished to those desiring to employ workwomen.

The plans of the third and sixth floors show the number, size, and situation of the rooms devoted to the work of this department. They are large, sunny, well lighted and ventilated, and fully equipped with the apparatus essential for good work. The electric lights are so arranged as to allow work to be carried on with as much comfort in the evening as in the day. The Technical Museum contains many samples of textile fabrics, both ancient and modern, and affords pupils ample opportunity for study. The Library is also an important factor in the usefulness of this department. The best and latest books treating of domestic science are constantly added, and subject material is arranged for the pupils.

In all branches of instruction there are morning, afternoon, and evening classes. Evening classes are for those whose duties prevent attendance during the day. The courses of study are the same, so far as the limited time permits. The number of pupils in each class is limited, that all may have opportunity for practical work under the direction of the teacher.

Pupils are received at the beginning of each term of the school year, and classes are then formed to commence the various courses. Applicants are required to present their application blanks one month before the beginning of the term for which they wish to enter.

COOKERY.

On the sixth floor of the Main Building are the kitchens occupied by the cooking department. These kitchens, three in number, are excellently ventilated by means of large skylights with numerous swinging sashes, and are provided with tables having drawers furnished with the small utensils for the use of each pupil. The closets are stored with other utensils for cooking, and with china, silver, etc., for

table service. Coal and gas stoves, conveniently placed, enable twenty pupils to work at the same time.

Each class receives one lesson of two hours' duration weekly. Materials are furnished free of charge, and the dishes made are tested by the pupils at the close of each lesson. The full course consists of two graded courses—the first covering a period of six months, the second of three months. The instruction in the first includes all the fundamental principles of cooking.

FIRST COURSE OF SIX MONTHS.

Making and care of fire.	Broiling.
Dish-washing, and care of kitchen.	Frying and sautéing.
Boiling meats, vegetables, and cereals.	Roasting meats and poultry.
Soups.	Various ways of cooking fish and eggs.
Stewing and braising.	Bread, and breakfast cakes.
Warmed-over dishes.	Pastry, cake, and plain desserts.
Simple invalid-cookery.	

The object of the course is to familiarize the pupils with the most healthful, attractive, and at the same time economical methods of preparing such articles of food as are found on a well-appointed home-table. In connection with every lesson a brief talk is given by the instructor upon the chemical and nutritive properties of the materials used, the changes produced by cooking, etc., in order that the pupil may not only be able to prepare all varieties of wholesome and appetizing dishes, but may also have a knowledge of the properties of the different food materials and their values as nutritive agents, and thus be capable of choosing intelligently the several dishes for suitable menus. Once a term, pupils are required to bring in a bill of fare for a week's breakfasts, luncheons, and dinners, which can be purchased at a minimum cost.

A practical lecture on "How to buy meat," is given by a butcher who illustrates his subject by cutting sides of beef, mutton, and pork, in the presence of the class.

SECOND COURSE OF THREE MONTHS.

Clear soups and bisques.....	Frozen creams.
Soufflés and croquettes.....	
Salads, French and mayonnaise dressing.....	A breakfast.
Entrées and sauces.....	A luncheon.
Roast game.....	A spring dinner.
Fancy desserts and cakes.....	A winter dinner.

In the second course more complicated cooking is undertaken, combining and elaborating the principles taught in the first. Pupils are instructed in the preparation and cooking of richer soups, roast meats and game, with the accompanying gravies, sauces, and vegetables; also entrées, croquettes, and salads, which increase the varieties of food and utilize the materials often wasted. In addition to this, several lessons are devoted to cooking and serving in proper form a breakfast, luncheon, and two dinners.

Pupils who have satisfactorily completed the first and second courses, and passed the written and practical examinations, will receive a diploma. The practical examination consists in the making, at home, of test dishes which are brought for inspection, and in the cooking and serving of a dinner of five courses.

SPECIAL CLASS.

[Three lessons each week.]

A special class, completing the first and second courses in three months, has been arranged for those whose time is limited.

NORMAL COURSE.

The special purpose of this course is to train teachers of cooking. Pupils are admitted in September. The class is limited to twelve. Those desiring to enter must have a practical knowledge of cooking, and must present a satisfactory statement or letter in regard to general scholarship. The course covers one year, five days each week, and includes, besides a thorough course in cooking, instruction in physiology, chemistry of cooking, normal methods, and practice teaching. Teachers of cooking who possess some knowledge of domestic science are in great demand, therefore it has seemed wise to supplement the regular normal course by short courses in household economy and laundry work. Materials used in cooking will be furnished free of charge.

COOKING FOR INVALIDS.

The course has been approved by several leading physicians, and is especially designed for nurses and others desiring to learn to cook for the sick. It includes:

Meat-extracts.

Broths.

Gruels.

Soups.

Beverages.

Dishes daintily prepared and served to convalescents.

FANCY COOKING.

This course is intended for those who have already a practical knowledge of cookery, but who desire to learn to make entrées, salads, dainty desserts, etc. The lessons will be of three hours' duration, and pupils will be allowed to select the dishes they desire to learn to make. Eight pupils constitute a full class.

SATURDAY MORNING CLASS.

Classes for school-girls between twelve and sixteen years of age meet from 9:30 to 11:40 o'clock, Saturday morning.

The work of these classes is of the same general nature as that above described for the first course, but is somewhat modified.

EVENING CLASSES.

In all the courses there are evening classes for those who cannot attend during the day. These classes are especially adapted to cooks.

HOUSEHOLD ECONOMY.

This course comprises a series of twelve lectures applying scientific methods to practical house-keeping, and is designed to teach young girls and women how to manage homes of their own, or to take charge of other homes as professional house-keepers. As far as possible, practical demonstrations are given in the various branches of the work.

Evening classes are intended for all working-women interested in household management and in economy of time, strength, and money.

COURSE.

Choosing a home.

Sanitation, ventilation, heating.

Care of cellar, stoops, side-walks, and back yard.

Kitchen work, with care of utensils.

Laundry; arrangement of work and furnishings.

Dining-room and butler's pantry.

Drawing-room and halls.

Sleeping, guest, and sick-rooms.

Store-room and linen closet.

House-cleaning.

Social side; courtesy and entertaining.

Household accounts.

Miscellaneous and maid.

LAUNDRY.

Instruction in this branch has been planned to afford young girls and women an opportunity to prepare themselves to direct intelligently household laundry work, or to become practical laundresses.

The course covers three months, and includes instruction in the simple chemistry of cleansing clothing and household linen, and the practical application of these principles in washing, removing stains, starching, and ironing. Each class receives one lesson a week.

COURSE.

Methods of removing stains.

Talk on soap and bleaching powders.

Sorting, soaking, washing, boiling, rinsing, bluing, wringing, bleaching, drying, dampening, folding, and ironing bed and table linen.

Starching and clear starching.

Laundering shirts, collars, cuffs, body-linen, dresses, fine baby-linen, silk, laces and embroideries, colored clothes, and flannels.

Pupils are expected to bring clothes to launder in class. Special instruction in ironing will be given to those who do not care to take the course in washing. These pupils will be required to bring articles prepared for ironing.

HYGIENE AND HOME-NURSING.

Three courses, each consisting of twelve lectures of one hour's duration, constitute the full course in hygiene and home-nursing. The aim is to teach women how to care for sudden illness or accident that may occur in the family, and to enable them to perform intelligently the duties of a nurse where trained service cannot be obtained.

In these courses the work of bandaging, artificial respiration, applications of splints, lifting helpless patients, preparing and applying poultices, is done by the pupil under personal supervision of the instructor until a reasonable degree of proficiency is attained. To a large extent the instruction is by practical demonstration upon the living model.

FIRST COURSE.

Heart, and circulation of the blood.

General direction of main arteries.

Various bleedings and ways of arresting them.

Immediate treatment of those suffering collapse from injury or fainting, and of those apparently drowned, or otherwise suffocated.

Immediate treatment of burns, scalds, wounds, and bruises.

Observing and recording pulse, respiration, and temperature.

Furnishing, warming, and ventilating the sick-room.

Bathing, dressing, and administering food and medicines to patients.

Practical bandaging, bed-making; lifting and propping helpless patients.

SECOND COURSE.

Prevention and management of bed sores.

Treatment of fevers; bathing; sponging; diet; use of disinfectants.

Nursing special diseases; care of children; immediate treatment of fractures, sprains, unconsciousness, epilepsy, hysteria, poisonous bites, sun-stroke, frost bite; poisons and their antidotes.

Practical preparation and application of poultices, blisters, and stupes; packs and vapor baths.

Carrying the sick and injured.

THIRD COURSE.

Hygiene of infancy and childhood,—growth, food and artificial feeding, teething, clothing, exercise, etc.

Outlines of physiology and hygiene for adults; care of eyes, ears, skin, digestion, and lungs, illustrated by dissection of animal heart, lungs and eye.

SEWING.

The complete course includes three graded courses of three months each, two lessons a week. In connection with each course there are talks on the various materials used, with hints as to judicious purchasing. In the class-room for the inspection of the pupils there is a collection of samples of the different kinds and qualities of materials used.

FIRST COURSE.

Basting and over-handing.
Turning hem by measure, hemming, and running.
Back-stitching, overcasting, and felling.
Gathering, stroking gathers, and putting on bands.
Making of button-holes and eyelets.

Putting in gussets.
Patching.
Darning, on cashmere and stockings.
Herring-bone, hem, and feather-stitching.
Tucking, whipping, and mitering.
Making white apron by hand.

This course is devoted to hand sewing, beginning with the threading of the needle, making knot, and use of thimble. The various stitches are practiced, until fully learned, on small pieces of calico and muslin furnished by the school; other materials are furnished by the pupil.

SECOND COURSE.

Machine-stitching.
Cutting white skirt by measure.
Making skirt with or without ruffle.
Cutting under-waist, basting, stitching, felling, and trimming.
Cutting and making a simple cambric dress with straight-gauged skirt, and a blouse or plaited waist without lining.

To enter this course the pupil is required to be familiar with all the stitches used in hand-sewing. A certain amount of sewing is required to be done at home. Pupils select and furnish their own materials, but machines and lap-boards are furnished by the school.

THIRD COURSE.

Fine hand-sewing.
Making all kinds of under-garments, baby-linen, and children's dresses.
Advanced machine-work.
This course is intended for those who have completed the second course, and desire to perfect themselves in fine sewing, garment-making, and in repairing.

SPECIAL CLASS.

[Four mornings each week—three months.]

For those who desire to use their skill professionally, a special class completing the entire course in three months has been arranged. Applicants must have some knowledge of hand and machine sewing, and bring for examination a garment which proves their ability to take up the required work.

Those who have satisfactorily completed the three courses, and have made without assistance a lady's cambric sack, will receive diplomas.

A Saturday morning class, meeting from 9:30 to 11:30 o'clock, is especially designed for children, the course of study being of the same character as that above described for the first course. After this has been finished the pupils make clothes for dolls, or simple garments for themselves.

DRESS-MAKING.

The complete course is systematically graded, and comprises four courses of three months each. There are three lessons a week, two of two hours each devoted to practical work, and one of one hour, to free-hand drawing and design.

Applicants must be at least eighteen years of age, and must have successfully completed the first and second terms of the sewing course, or must submit samples of their work which prove their knowledge of hand and machine sewing, and their ability to make simple garments and cambric dresses.

Materials used are selected and furnished by the pupils. Large tables for drafting, tracing, and cutting; sewing machines, dress forms, mirrors, books of models, samples of dress materials, and lockers for storing work are supplied by the school.

As a part of each course, talks are given on hygiene, the selection of fabrics, and on form and harmony of color in dress, in order that the pupil may gain a knowledge of design, and the ability to originate and make tasteful garments.

A parallel course in drawing, under the direction of the Art Department, forms an optional part of the dress-making course. This is in three grades, beginning with pencil practice, and ending with colored drawings of tasteful dresses, and is designed to train eye and hand, and to enable pupils to sketch their own models.

Throughout the courses the work cut and planned in the class must be finished at home, and pupils are required to prove satisfactorily their knowledge of the elementary before entering the higher course.

FIRST COURSE.

Instruction in the choice of materials.	Basting, fitting.
Cutting foundation skirt from measure.	Finishing, trimming.
Finishing skirt for trimming and draping.	<i>Drawing.</i>
Talk on hygiene and form.	Pencil practice.
Planning dress.	Study of the appearance of cylindrical objects.
Draping skirt.	Study of drapery.
Cutting waste and sleeves from pattern.	Drawing of skirts, bows, etc.

The first course is designed to instruct those who have a fair knowledge of hand and machine-sewing and the making of simple dresses, in the best method of making from pattern and finishing tasteful, close-fitting dresses of wool or cotton. This is the foundation of all good work. Pupils are shown a variety of materials, and are instructed in regard to the texture, color, and suitability of each for different uses and people. The principles of cutting skirts from measures, and of neatly finishing and hanging them are taught.

The talk on form treats of the most becoming manner of making a dress by adapting lines of the material to the lines of the figure, and selecting trimmings suited to the material and to the character of the figure. Dresses are planned to carry out these principles, close-fitting waists, with French darts, being cut from a pattern made for each pupil according to the system used in the second course.

Each pupil is required to complete one dress for herself, and to do as much practice work at home as is possible.

SECOND COURSE.

Choice of materials.	Drafting waist with extra seam for large figures.
Taking measures.	<i>Drawing.</i>
Drafting close-fitting waist with French dart.	Drawing of waists and gowns.
Cutting and fitting waist linings.	Notes on form and color.
Cutting and fitting plain cloth basque.	Practice in the use of color.
Cutting and matching striped and plaid basque.	

Applicants must complete the first course, or submit a dress of their own making and pass an examination on the first course.

The course is intended for those having a thorough knowledge of finishing and making wool dresses by pattern, who desire to learn cutting and fitting from measure either for home or professional use. Much time is given to practice in taking accurate measures as the basis of perfect fitting garments.

Instruction is confined entirely to the drafting and fitting of waists, in order to make the work as practical as possible. Constant practice at home in drafting is required. Two basques, one of plain, and one of striped or plaid material, are completed.

THIRD COURSE.

Drafting and fitting plain princess dress.	<i>Drawing.</i>
Practice in draping.	Time and memory sketches.
Making dress from original design by the pupil.	Problems in design.
	Sketches, in water color, of gowns, etc.

The third course is designed for those pupils who have satisfactorily completed the second course, and includes the making of more complicated dresses which embody artistic lines and harmony in coloring, and of the Jenness-Miller gown form.

FOURTH COURSE.

Drafting jackets of various styles.	Lining and finishing jacket.
Cutting, basting, and fitting.	Cutting and fitting child's dress and coat.
Making various styles of pockets and collars.	

SPECIAL CLASS.

[Five mornings each week—two terms.]

This class, completing the full course in six months, has been arranged for those who wish to become dress-makers, and whose time is limited. Applicants must have a knowledge of making dresses from pattern, must bring for inspection a dress which in its finish proves their ability, and must pass an examination on the first course.

Those pupils who satisfactorily complete the full course in dress-making and drawing, and make for examination without assistance two dresses, a street dress and a house dress, will receive a diploma.

MILLINERY.

In this branch of the department there are three graded courses, each covering a term of three months, three lessons a week, or two hours of practical work of two hours each, and one of one hour in free-hand drawing and design.

Applicants must be over eighteen years of age, and must be able to do neat hand-sewing. Pupils are required to complete satisfactorily the first course, or pass an equivalent examination, before entering the advanced classes.

All materials used are selected and furnished by the pupils. There are, in the class-rooms, hats of choice materials, selected with great care, which are used as models to educate the eye of the pupil; also a collection of samples of the various materials used in millinery, and books illustrating the history of costume in all countries.

Talks are given, in connection with each course, on the suitability of materials, combination of colors, and character of lines and form as essential to artistic millinery.

The parallel course in drawing, under the direction of the Art Department, is an optional part of the instruction in millinery. It is designed to train the eye and hand, thus enabling pupils to sketch their own models, and is in three grades, beginning with pencil practice and ending with colored drawings of trimmed hats.

As a help toward original work, pupils are required throughout the course to make, at home, hats and bonnets, and to submit them for inspection.

FIRST COURSE.

Wiring.

Folds.

Binding.

Fitted facing, full facing.

Puffed edge.

Varieties of bows.

Plain covered hats made and lined.

Talks on color and lines.

Principles applied in a hat of choice materials.

Drawing.

Pencil practice.

Study of the appearance of cylindrical objects.

Drawing untrimmed hats.

Drawing drapery, bows, etc.

The first half of the course consists of instruction in the methods of making the various facings and edges used on the brims of large hats, and trimming with suitable bows. The method of making plain covered hats is also taught. This forms the basis of all subsequent work, and is therefore most important.

Materials used for this practice work are colored cotton flannel to represent velvet, and harmonizing shades of sateen, cut and used as ribbon. With these materials old straw and felt hats, and new buckram frames are trimmed and covered. In order to apply the principles learned in practice work, the remaining lessons are devoted to making and trimming a hat of choice materials selected by the pupil.

SECOND COURSE.

Plain covered bonnets made, trimmed, and lined.

Full crowned, fancy edge bonnet.

Crape bonnet.

Silk hat or bonnet.

Shirred bonnet.

Principles applied to a bonnet of choice materials.

Fancy toque or turban.

Talk on color and lines.

Principles applied to a toque or turban of choice materials.

Drawing.

Drawing trimmed hats and bonnets.

Notes on form and color.

Practice in the use of color.

Practice in making various kinds of bonnets, using cotton flannel and sateen, forms the first part of this course. Afterward those pupils who desire to become professional milliners are instructed in making bonnets of crape and silk, while the others apply the principles to a bonnet of good colored materials. Practice work on toques and turbans, and its application to a hat of choice materials complete the course.

THIRD COURSE.

<i>Winter season.</i>	<i>Summer season.</i>	<i>Drawing.</i>
Fancy toque.	Fancy toque.	Time and memory sketches.
Evening bonnet.	Lace bonnet.	Problems in design.
Large velvet hat.	Large net hat.	Sketches, in water color, of hats, etc.

Throughout this course pupils work in choice materials to gain confidence and experience. Each pupil makes three or more hats for herself or friends, suited in style and materials to the season in which the course is given, *i. e.*, velvet, crape, and feathers in winter; net, lace edge, flowers, and ribbon in summer.

SPECIAL CLASS.

[Five mornings each week—Three months.]

This class, completing the full course in three months, has been arranged for those who wish to become milliners, and whose time is limited. Applicants must bring for examination a hat made by themselves, which shows their ability to undertake the course.

Those pupils receive a diploma who satisfactorily complete the full course in millinery and drawing, and make, for inspection, without assistance, four hats, *viz.*:

Large net hat.	Large velvet hat.
Lace edge bonnet.	Crape toque.

“The Department of Commerce” formerly known as the “Department of Shorthand” and then limited to instruction in Phonography and Typewriting; now includes Book-keeping, Arithmetic, Penmanship, and instruction both in the English and Spanish languages; while further enlargement of its scope is promised to comprise Industrial Economies, Commercial law, Geography, Correspondence, and the German Language.

The thirteen pages given in the catalogue to the Department of Mechanic Arts are here given in full, excepting the floor plans and engravings of specimens of the articles required in the shop work. It will be seen by comparison with the account given in the preceding pages that in this, as in other features of the Institution, there has been continuous growth.

DEPARTMENT OF MECHANIC ARTS.

The work of this section of the Institute has two distinct aims; one being to add such practice in manual work to the studies of a high school course as shall make the education more helpful in its preparation for after life; and the other, to give a thoroughly practical training for the principal mechanical trades. Certain scientific and technical instruction is also given by the department.

To carry out this work, the department is equipped with a series of shops and laboratories, which are supplied with every appliance that can in any way enlarge the scope and promote the efficiency of the instruction.

MANUAL WORK.

In the educational work of the Technical High School Department the shopwork enters upon an equal basis with the regular academic studies. Its office is not to turn the pupil aside from his academic studies, but to reinforce them; not to train

for any particular mechanical pursuit, but for the activities of a broad manhood. While the student's mind is being stored with the facts of mathematics and science, and elevated by the teachings of literature and history, he is receiving the discipline of care and patience at the bench, and gaining strength of judgment in shaping means to an end.

The course mentioned in outline on page 26 is given below in detail.

FIRST YEAR.—BENCH-WORK.

The wood working bench-room is equipped with forty-eight single benches, each of which is supplied with a complete outfit of hand tools.

The pupil is first taught the use of saws, planes, and chisels, and the methods of laying out work. When some command of the tools has been acquired, the different joints used in carpentry and cabinet work are made, and lastly, a few constructive pieces are executed, viz.: a small paneled door, window sash, dove-tailed box, etc.

TURNING.

The lathe-room is supplied with forty-eight 9" speed lathes, twenty-four of which were built at the Institute. Each lathe has its complement of turning tools, and cupboards for the work. This room contains a band saw, two jig saws, and the mill tools for preparing stock,—a double circular saw, feed planer, and jointer. It is also fitted with twenty-four sets of bench-tools for pattern-making.

The work in turning embraces straight, shoulder, and molded center turning, in both hard and soft woods. Grace of outline and beauty of form are especially considered, and practice in design is given by requiring certain pieces to be worked out by the pupils.

SPINNING.

The elements of metal spinning are next taken, and type forms of bowls, cups, vases, etc., are worked out in thin sheet metal.

PATTERN-MAKING.

The operations of molding are first explained to make clear the function of draft, halving, cores, etc., and then patterns are prepared for some of the pieces to be used later in the machine shop, after which more difficult exercises, involving core boxes, are executed, *e. g.*—pipe elbow, grooved pulley, and straight-faced pulley.

Accompanying the shop-work of the first year, lectures are given on the following subjects: The action of cutting tools; Growth of trees; Distribution of timber forest; Processes of lumbering; Commercial classification of woods; Specific properties and applications.

SECOND YEAR.—MOLDING.

The foundry is fitted with twenty-four molding benches, each of which is supplied with its set of molding-tools and flask, and also tables for plaster casting. A twenty-inch cupola, two brass furnaces, a gas furnace for white metal, and a core-oven complete the equipment. The necessary apparatus for finishing the castings,—pickling trough, tumbling barrel, and emory wheels,—is placed in the basement.

In this shop, the patterns prepared in the previous year are first used, and by their use the operations of two-part molding, core-making, and three-part molding are taught. The greater part of this work is done at the bench with small patterns, but the principles of swept-up work and the handling of larger pieces are illustrated by operations on the floor. Later, the methods and applications of plaster casting are explained, and duplicates of clay and other originals are made.

TIN-SMITHING.

A portion of the machine-shop is furnished with furnaces, anvils, shears, and soldering-irons for twenty-four pupils. After practice in preparing different metals for hard and soft soldering, and in forming various kinds of joints, the principles of surface development, previously learned in the drawing room, are applied in making simple forms of pans, bowls, cups, pipe joints, etc., in sheet tin.

FORGING.

The forge-shop is equipped with one hand, and twenty-four power forges. The blast is supplied by a centrifugal blower, and the smoke and fumes are carried off by an exhaust fan. Each forge is furnished with anvil, tongs, hammers, and other tools.

The care and management of the fire are first explained, and then the operations of drawing, upsetting, forming, and welding in iron are practiced in a series of exercises, many of which serve simply to illustrate certain operations, while others deal with such constructions as hooks, bolts, shackle, chain, swivel, hinge, tongs, etc. Afterwards, working in steel is practiced, and a set of chisels and lathe tools is made and tempered. To gain an exact idea of the treatment of the piece before dealing with hot iron, many of the exercises are first executed in lead. The course is completed by some project in ornamental work which involves many of the operations previously dealt with.

THIRD YEAR.—MACHINE-SHOP.

Benches, with a vise and a supply of files, chisels, and other tools are provided for twenty pupils. The power tools consist of sixteen engine lathes, six speed lathes, three planers, two upright drills, one universal milling machine, one universal grinding machine, one universal hand lathe, one grindstone and one wet emery wheel.

The bench-work course consists of chipping, surface filing, straight, parallel, and round fitting; the making of calipers, try square, inside and outside gauge sheet steel; and the use of taps and dies.

Before commencing the tool course, an explanation of the construction of the lathe and other tools is given, and the theory of cutting tools is analyzed. The first part of the course gives practice in plain and taper turning and fitting, screw cutting, etc., after which come exercises introducing various operations on the different machines, and finally, a set of taps, twist drills, and reamers is made and finished. The course ends with the construction of some project such as a small dynamo, motor, or steam engine.

AFTERNOON CLASSES.

Classes in several of the above subjects, but designed for pupils of other schools, are held on three afternoons a week, from 3:30 to 5:00 o'clock. The object of these classes is the same educational purpose involved in the High School work. A progressive course is provided, embracing joinery and wood-turning, in the first year, forging in the second, and machine work in the third. Applicants must be at least fourteen years of age.

TRADE SCHOOL.

The aim of the Trade School is to give thorough instruction in the principles of a mechanical trade, and sufficient practice in its different operations to produce a fair amount of hand-skill. This end is reached by providing systematic courses of practical work, in which the principles of each trade are carefully explained, and by

giving frequent talks on methods and materials. Progress under such a plan is necessarily rapid. The school does not pretend to turn out journeymen mechanics, but to afford a training which further practice in active work will perfect.

The hours of session for day classes are from 9:00 a. m. to 5:00 p. m. for five days each week, and from 9:00 a. m. to 12 m. on Saturday; and for evening classes from 7:30 to 9:30 on Monday, Wednesday, and Friday of each week.

Applicants must be between sixteen and twenty-five years of age. All courses are at least six months in length, and no applicants will be admitted later than two weeks after the beginning of the term. All tools and materials are furnished without extra charge.

CARPENTRY.

Practice is first given in the use of saws, planes, chisels, and laying-out tools, and is followed by a thorough course in joint-work. After this practice, and when some mastery of the tools has been gained, a model of a frame house is made, and the different methods of framing illustrated. Afterwards, partitions are set and bridged, and floors laid. Door and window frames are made and placed in the partitions, which are sheathed, clapboarded, shingled, and corniced. Lastly, inside trimming is taken up; doors, sashes, and shutters are made and hung; wainscoting, base-boards, and stairs built; etc. Constant practice is given in the use of working drawings, and in laying out work from plans.

BLACKSMITHING.

The instruction includes care and management of fire, operations in drawing, upsetting, forming, and welding iron, and making and tempering steel tools. The exercises mainly represent useful pieces of work, and several complete designs in ornamental work finish the course.

MACHINE-SHOP.—*Two Years' Course.*

Bevel, surface, and key-way chipping are first practiced; after which the class is put upon straight surface filing until ability to file straight and true is obtained. This is followed by straight, tongue, round, and dove-tail fitting, free-hand filing, filing to templet, making calipers, square, bevel, and gauges in sheet steel, use of taps and dies, and practice in scraping.

The tool-work gives practice on the engine lathe in plain and taper turning, outside and inside screw cutting and fitting; after this, exercises are introduced in hand-turning, and varied practice on the planing machine, shaper, drills, milling machine, and grinding machine. The theory of cutting tools is analyzed, and the construction of the different machines explained.

BRICKLAYING.

The men are first taught to handle the trowel and to spread mortar; practice is then given in building eight, twelve, and sixteen-inch walls, with square and blocked ends, and with returned corner; afterward, arches in walls of the same size are constructed, and later, flues, fire-places, setting sills, and corbeling. At first each man works on a separate section of wall, and no attempt is made to do rapid work; but towards the end of the course a number of men are placed side by side on a long wall, and greater speed is attempted.

Instruction is given, by means of lectures, upon the strength of walls, theory of arches, properties and proper use of mortar, cement, etc.

PLASTERING.

Instruction is given in scratch-coating, laying-off, browning, and hard finishing, and in running and mitering small moldings and cornices. The booths for plastering are formed of stud-partitions, lathed in the usual manner, and arranged to present the conditions of an ordinary room.

The use of hawk and trowel is first taught, and the scratch-coat is then applied; this is afterwards taken off, and the walls are next covered by laying-off, and practice obtained in the use of darby and rod; after this, practice in browning is given on the hard and dry scratch-coat, and this is followed by considerable practice in finishing with sand-mortar to prepare for hard finishing. Running and mitering simple cornices are taught last.

PLUMBING.

The plumbing shop is equipped for about fifty pupils, each member having a gas-furnace for melting solder, and a drawer holding a set of tools. Instruction is both practical and theoretical, lectures being given from 8:30 to 9:30 o'clock, every Wednesday evening.

The manual work includes the use of tools; preparing wiping cloths; making soil; tinning soldering iron, brass, iron, lead, and tin; making solder; soldering seams; making cup-joint, over-cast joint, straight wiped-joint, flange joint, and branch joint; working sheet lead into bends, traps, service boxes, and safes; lining tanks, caulking iron pipe joints, and bending with sand and kinking irons.

The lectures deal with the proper arrangement of drain, soil, and waste pipes, trapping and ventilating the same, supply pipes, boilers, tanks, fixtures, pumps, and also explain mistakes in plumbing.

HOUSE AND FRESCO PAINTING.

The Master Painters' Association of Brooklyn co-operates in the direction of the painting classes, and at the end of the term, examinations are held, and certificates granted, with their approval.

The equipment for the house painting class consists of screens containing doors, windows, and wainscoting; and, for the fresco workers, of booths, plastered on sides and ceiling, with varied forms of cove and cornice.

HOUSE PAINTING.

The house painting course includes both elementary and advanced classes; the former having practice in the preparation of surfaces, mixing paints, and plain painting on wood, brick, and plaster surfaces; and the latter, in varnishing and hard wood polishing, polish white, gilding, lining, graining, and paper hanging.

Lectures are given on the harmony of colors, mixing of colors, proportion of oils and dryers, and the various materials used in painting.

SIGN PAINTING.

A special class in sign painting will be organized next year. The instruction will include preparation of surfaces, spacing and plain lettering, followed by ornamental lettering in gold and colors, and painting on glass and metal.

FRESCO PAINTING.

Instruction is given in preparing walls and ceilings for calcimine, in lining, laying out work, making and applying pounce and stencil, and in putting on flat and shaded ornaments.

ADVANCED FRESCO PAINTING.

Applicants are admitted only on approval of some member of the Master Painters' Association, or after giving satisfactory proof of proficiency in plain fresco painting.

Instruction is given by alternate practice in drawing and coloring designs in the Art Department, and in applying the same in fresco to the plastered wall.

SCIENCE AND TECHNOLOGY.

The outline given below applies only to evening classes, which meet on different evenings in the week, so that opportunity is afforded in many cases of taking more than one subject at a time.

GEOMETRY.

Instruction is given by lectures and recitations, and deals with the proprieties of lines, angles, and plane figures, as involved in plane geometry. Particular care is taken to bring out the application of these principles to methods of drawing and construction.

CHEMISTRY.

The course involves thorough study of the laws of chemical combination, and of the proprieties of the elements and compounds of inorganic chemistry. Theoretical instruction is given by means of lectures, and is followed at each session by individual practice in the laboratory. All the elementary gases and the common acids are manufactured and tested by each student. The characteristic properties and reactions of the metals are studied experimentally, and a few simple unknown solutions are qualitatively analyzed. The facilities of the laboratory are exceptionally fine, and the outfit loaned to each student lacks nothing that is necessary for thorough work. Special stress is laid upon the application of chemistry in manufacturing processes.

A second year course provides opportunity for extending the laboratory practice in qualitative analysis, and finishes with the elements of quantitative work.

ELECTRICAL CONSTRUCTION.

This course aims to give a knowledge of the principles of dynamic electricity and magnetism, and to trace the application of these principles to the methods and constructions of actual practice. Instruction is given by means of lectures and laboratory work. The lectures take up the analysis of the magnetic field and lines of force, magnetic circuit, properties of electric current, electro-magnets, induced electro-motive force, electrical units and work of currents, and the application of these principles to the construction of primary and secondary batteries, telephones and telegraphs, dynamos, motors, transformers, measuring instruments, arc and incandescent lighting systems.

The laboratory work deals with the verification of the laws brought out in the lecture-room, and affords continuous practice in the use of measuring instruments—volt-meter, ammeter, and Wheatstone bridge, and experimental study of the action of both continuous and alternating current dynamos and motor.

STEAM.

Instruction deals with the nature and laws of heat, combustion of fuel, laws of steam generation, relations of heat and work in the engine, and analysis of valve action. The principles involved in the construction of boilers, stationary, locomotive, and marine engines are studied and their details examined.

The laboratory is equipped with a ten-horse-power horizontal engine, specially arranged for experimenting, an hydraulic friction brake, condenser, weighing tanks, etc. Practice is afforded in setting slide valve, taking indicator cards and calculating data from the same, and in making efficiency tests on both boilers and engines.

STRENGTH OF MATERIALS.

The strength of materials and their behavior under strain, resistance to tension, compression, shearing, and the theory of beams are studied, and the principles gained are traced to their applications in building and machine construction.

The laboratory is furnished with a 35,000-lb. Olsen testing machine, a cement testing machine, and a quantity of apparatus for individual experimentation.

MACHINE DESIGN.

The course involves study of the elements of mechanism, link work, gearing and belting, and analysis of machine construction.

BUILDING CONSTRUCTION.

Explanation is given of the different methods of construction in brick, stone, lead, iron, slaters', plasterers', and carpenters' work, and their relative advantages and commercial value described. The preparation of specifications is also explained.

METALLURGY OF IRON AND STEEL.

The properties of metals, ores, and fuels are studied, and the blast furnace, puddling, Bessemer, open hearth, and crucible processes analyzed.

The connection of many of these courses with those of the Art Department will be seen by reference to pages 32 and 39.

Five pages are given to details of instruction in the Music Department which has six several courses.

MUSIC DEPARTMENT.

The aim of this department is to give the benefits of musical education to the masses of the people. The influence of vocal music upon national life and character is very great. It is recognized as one of the best means of moral, physical, and intellectual development. The fact that musicians, unlike others who lead the progress of the world, have continued to use means or vehicles of expression which are not economic and simple, but cumbrous and complex, explains why music, so simple in itself and so dear to all, has remained a closed book and an impossible study to the great mass of mankind.

By using the most reasonable methods of notation and of teaching music, it is confidently anticipated that this department will reach very many who have been prevented from taking up the study, and who will become not only good musicians, but, in many cases, successful teachers.

The course of study comprises vocal music, theory of music, voice culture, and the training of teachers. The classes are graded from the elements of music to the advanced stages. Pupils having no previous knowledge of music can by easy progress reach a high degree of musical ability. Grade examinations are held at the end of each term, and the certificates of the American Tonic Sol-fa Association and College of Music are granted to those who pass.

METHODS.

The Tonic Sol-fa system is chiefly used in the department as the means to a thorough knowledge of music; but there are also classes for those who wish to apply their knowledge of music to the staff notation.

The Normal Training course is based upon the practical experience of the Tonic Sol-fa College, London, probably the first college of music to recognize the necessity, and to undertake the thorough preparation of teachers of music.

COURSE OF STUDY.

I. VOCAL MUSIC.

The course consists of eight grades.

* * * * *

II. THEORY OF MUSIC.

This subject comprises musical and verbal expression, musical form, harmony, musical composition, and counterpoint.

* * * * * *

III. VOCAL CULTURE.

The course comprises respiration, control of the breath, attack, vowel color, enunciation, blending of registers, agility, musical ornaments, phrasing, and style.

IV. NORMAL COURSE.

This course has been inaugurated to meet the growing demand for trained teachers and supervisors of music in public schools, etc. It extends over two years, and insures not only a broad musical education, but a thorough equipment for professional teaching. The hours are from 9 a. m. to 1 p. m., five days per week. The course includes the following subjects:

Vocal culture.	Musical and verbal expression
Harmony.	Acoustics.
Musical form.	Physical culture.
Counterpoint.	Educational psychology.
History of music.	Art and science of teaching.
Vocal physiology.	Practical grammar and rhetoric.
Sight reading.	Kindergarten color music.
Musical composition.	

Entrance examinations take place in June and September. Applicants are required to have the third grade certificate in vocal music, and a fair general education. The necessary musical qualifications will require about six months' study and may be obtained in one of the day or evening classes held at the Institute.

ART OF TEACHING.

This course consists of a series of lecture-lessons in the art of teaching music, with individual practice in teaching, to prepare teachers of music for public schools. There are afternoon and evening classes for those who are employed during the day.

KINDERGARTEN COLOR MUSIC.

A series of lecture-lessons is given on the color music system, intended to enable kindergartners to teach music successfully to the youngest children.

V. CHORAL SOCIETY.

This is intended to develop into an oratorio society of high grade, to give music to the public at low rates. A select choir of 24 members is also to be chosen from the Choral Society.

VI. LECTURE COURSE.

A course of lectures on interesting musical subjects is given during the season.

Classes in all the above subjects are held both day and evening. Day classes meet twice a week, evening classes once a week. There are also afternoon classes for children.

The Choral Society meets on Tuesday evening at 8:00 o'clock, from October 1 till May 1.

The Technical Museum is described in the early pages of this account. It still, as at first, occupies the fifth floor of the main building and has received considerable additions. As is justly stated

there is no limit to possible additions on the artistic side of such a Museum, while the technical side is necessarily limited; and can only grow after a certain point is reached, as science progresses. The following paragraphs from the four pages given to the Museum give a concise summary of its present condition:

THE TECHNICAL MUSEUM.

Many metals do not directly admit of artistic application, but it often happens that some of their compounds are of the utmost importance; thus, aluminium has only a very limited application in its metallic form, and silicon has none whatever, and yet they combine to form kaolin and clay, without which the manufacture of brick, earthenware, stoneware, and porcelain would be impossible.

The lower end of the room is occupied by a collection of pottery and glass, so arranged as to give an idea of the way in which the various classes are grouped together and connected with each other. Under the various divisions the productions of each country are collected and arranged chronologically, and as far as possible the materials and tools used in the course of manufacture are placed with the finished specimens.

The collection of organic material is placed on the opposite side of the room, and aims, in the same way as the inorganic, to teach the student by means of the sense of sight how a finished article is gradually developed from the crude material.

In the textile fabric collection, the artistic side becomes more important than the technical, although even here the technology of the preparation of the material for the making of the thread, and the subsequent weaving of the latter into cloths of various textures, is treated as thoroughly as possible. The aim of this collection is to represent the productions, in the way of cloth, embroidery, and design, of the various countries of the world, and at the same time to indicate, by means of antique and modern specimens, the gradual evolution of art in each country. In this way, it is hoped that the students may learn, by comparing the old with the new and the inferior with the better, what pieces of work really possess artistic merit, and may also acquire a knowledge of styles and designs which will be of use in original designing and other work which may be required of them.

At the present time the Technical Museum contains about seven thousand specimens, and new articles are continually being added. It is open to the public three times a week, as follows: Monday, 7:30 to 9:30 p. m. Wednesday, 3 to 5 p. m. Friday, 7:30 to 9:30 p. m.

As occasion offers, the various instructors of the Institute take their classes to the Museum for the purpose of demonstrating the subject upon which they have been working, and it is in this way that the collections are to be used to the best advantage. Besides this, on application at the General Office, students of the Institute may obtain permission to go to the Museum at any time for the purpose of studying a particular branch or subject in which they may be interested.

The fact that up to the present time the Museum has been visited by more than thirty thousand people shows the extent to which it is appreciated.

The five pages of the catalogue given to the account of the Library here follows; the tables already given from the two numbers of the "Record" showing the use made by the public of this library show how fully the intention of Mr. Pratt, has been appreciated. The facts here given as to the methods adopted to make this Library of real use to the pupils of the Institute, are full of suggestions as to the possible increase of usefulness to public school children, and to

the community at large, that might result from the adoption of similar methods on the part of the directors and managers of public and school libraries.

LIBRARY.

The work of the Institute in its various departments is supplemented by a well-selected and rapidly growing library. There are, at present, about 28,000 volumes upon the shelves, special pains having been taken to comprise in this number the best literature on the subjects included in the curriculum of the Institute.

It was at first intended to establish a library solely for the use of members of the Institute, and to confine its selections chiefly to the fine and useful arts. It was afterwards decided, however, that the library should have a much wider scope than this, in order that its influence might be as far-reaching as possible, and that, in pursuance of this idea, it should be general in character, and include the whole field of literature in its broadest sense; so that, while it may be especially strong in the departments most intimately related to the work of the Institute, it is not limited to these departments, but is rather a symmetrical general library, fairly representing the following classes:—bibliography, philosophy, religion, sociology, philology, science, useful arts, fine arts, literature, biography, history, travels.

The aim and policy of the founder was to establish a reference library from the resources of which all classes of people might draw material to aid in their studies; and, in addition to this, to make it a popular, free circulating library. The demands upon it are therefore unusually great, since it combines two ideas—that of a reference library designed as a work-room for the students and instructors, and that of a free circulating library open for the use of the public. Its privileges are extended, free of charge, to all residents of Brooklyn, children under fourteen years of age being restricted to books specified in the children's list.

The heads of the departments of the Institute aim to supplement their instruction by recommending to their classes lines of reading bearing upon the subject in hand, and to encourage them as much as possible to make free use of the Library.

Many of the books most frequently needed for reference are shelved in the rooms of the various departments of the Institute, so as to be easily available, and save even the trouble of visiting the Library for the purpose of consultation. These books are also duplicated in the Library for the use of the public.

The Reading-room connected with the Library is large, comfortable, and well-lighted. Periodicals and newspapers are kept on file for the accommodation of readers. About one hundred and seventy-five of the leading American, English, French, and German magazines and periodicals are represented.

The reference department, comprising dictionaries, encyclopedias, etc., to the number at present of about eight hundred, is so arranged that those wishing to consult these books have free access to the shelves. It is especially desired to make this department useful and helpful, and to have those in charge of it who are competent to judiciously guide the investigator in the best methods for looking up a subject, and to assist him by placing the resources of the library at his disposal. To facilitate the accomplishment of this object, the sets of periodicals in the Library to which reference is made in Poole's index are placed in the reference room so as to be readily accessible to the public. The reference room is open every evening, and an assistant is in charge. Artisans and others who may wish to read on subjects of particular interest to them, and who have only evening hours for the purpose, are especially welcome to this department, which is strong in technical reference-books.

In connection with the regular work of the Institute classes, informal talks are given to the students, explaining to them the general scheme of classification adopted in the Library, the use of the index to this classification, the plan of the

card catalogue, and the way to consult it, and showing them by practical illustrations the method of looking up subjects, so that they may be in some degree fitted to undertake their investigation with a knowledge of the materials to be employed, and with a spirit of self-reliance. To this end there will be given also descriptions of the prominent books of reference, so as to enable students to become familiar with their appearance, and the general character of their contents, and to give them some idea of the comparative value as authorities of the various atlases, encyclopedias, dictionaries, and other works which they will have occasion to consult.

Special lists of books on various topics connected with class-room work are prepared from time to time, and bulletined where they may be of service to those who feel inclined to pursue further the subjects they are studying.

Lists on psychology, archæology, and German literature have been compiled to serve those in attendance on the University Extension lectures on these subjects, and public events exciting general attention have also been noticed in this way.

Pupils of the public and private schools of the city have made free use of the Library, and special efforts have been made by those in charge of the reference department to render assistance in looking up matter pertaining to subjects assigned for essays, or any topics that arise in connection with their studies.

MEMBERSHIP AND CIRCULATION.

Over 12,000 persons have taken out cards of membership entitling them to draw books, and 105,646 books were circulated during the year 1890.

CATALOGUES.

An author and card title catalogue of all the books upon the shelves of the Library is placed in the delivery-room for consultation by the public. In this catalogue the biographical cards are arranged in a separate alphabet, according to the subject of the biography. An official card catalogue, containing fuller entries, is also kept. Both catalogues are made in accordance with the American Library Association Rules, and are written in the library hand. Type-written class-lists, arranged by subjects, and forming a subject-catalogue, are placed upon the tables in the delivery-room, and are revised and re-written from time to time, so that they may be kept up to date. The system of classification used is that known as the Dewey classification. As the Library is adding new books rapidly at present, it is not thought advisable to issue a general printed catalogue. A finding-list of the fiction in the Library arranged by authors and titles in one alphabetical series has been printed, however, and is sold to borrowers of the Library for a nominal sum. A children's list has also been prepared, pains being taken to select only the best books of the best authors, and children under fourteen years of age receive borrowers' cards on condition of drawing books from this list. The books in the children's list are grouped in chronological order according to the subject treated, the best illustrated and most tastefully bound editions having been selected. The object in preparing these lists is to create in the child a correct literary taste, so that he shall learn to discriminate for himself between good and poor reading.

LIBRARY HOURS.

The library is open daily from 9 a.m. until 6 p.m., and on Wednesday and Saturday evening until 9:30 o'clock. The reading-room and reference-room are open from 9 a.m. to 9:30 p.m. on all week days.

LIBRARY CLASSES.

In June, 1890, in response to appeals for instruction, a class in cataloguing was started, receiving three lessons per week, and in October a second class was formed. A training class in library economy was also organized in October, to meet three

mornings in the week, taking its instruction from the different library assistants in turn, as the subjects studied carried the class into different departments of library work. The work covered in this course is as follows:—

Practical charging-system work	Binding and rebinding.
Registration of borrowers.	Alphabetizing.
Mechanical preparation of books for the shelves.	Order-department work.
Accession-work.	Care of statistics.
Classification.	Reference work.
Shelf-listing.	Bibliography.
Stock-taking.	Rhetoric.
	English literature.

Some of the pupils in the cataloguing and training classes have had opportunities to put their training to practical test, and have taken positions in other libraries.

A class in English literature was organized later in the year to which those not members of the training class were admitted. Talks were given on the history of literature, and lists of collateral reading were supplied to the class. The books referred to in these lists were kept in the reference-room on a special table for a reasonable length of time, and treated as reference books.

Classes in library training, reference work, cataloguing, and English literature begin in November. Each course covers a period of six months. Applicants for these courses must present their application blanks one month in advance.

A series of talks to teachers on the reference work is planned for the coming winter, and co-operation with the teachers of the various city schools is desired.

By making application to the librarian, teachers can have special privileges in the drawing of books. Authors or scholars engaged in special lines of literary work may have added privileges granted them, to a reasonable extent, if due notice of their needs be sent to the librarian.

ASTRAL BRANCH.

On March 4, 1890, a branch library was opened in the Astral Apartment-house, on Franklin, Java, and India Streets, and books are now given out from this branch directly, and are also delivered from the main library, by messengers, to the borrowers, living in that part of the city. In this apartment-house is a spacious, well-ventilated, and well-lighted reading-room, 39 x 40 feet, which is heated by steam and lighted by electricity.

The Astral reading-room is supplied with the leading standard periodicals, and has a steadily-increasing patronage, now amounting to about 1,100 persons. The circulation is over 3,000 volumes per month, and nearly 3,000 visitors have availed themselves of the privileges of the reading-room in the same period.

We now come to an entirely novel feature of the Institute, and one which may be of value to the community in considering the wisdom and practicability of establishing school savings banks, which latter have been urged by some educators. It is only for this purpose, and to show the variety of instrumentalities looking to the public good, devised by the late Mr. Charles Pratt, that I venture to insert here the four pages of the catalogue given to the explanation of these peculiar features.

THE THRIFT.

The object of The Thrift is to promote habits of thrift; to encourage people, especially the young, to become prudent and wise in the use of money and time; to help place habits of thrift and economy in strong contrast with habits of thriftlessness and extravagance; to assist people to buy homes for themselves, and to this end to encourage the use of co-operative banks, building and loan associations, when they are managed for the good of the people; to foster the use of savings banks, trust companies, or institutions where the savings of the producing class can be safely deposited; also, to do all such things as experience shall prove to be essential to the accomplishment of these ends.

For the purpose of developing and carrying out the above objects, an Advisory Council has been appointed, whose duty it is to supervise the conduct and the extension of the work undertaken by The Thrift. This Council does not, however, assume any financial responsibility, or have any personal interest to serve aside from the general object of The Thrift, as provided by the rules and by-laws which govern it.

In conformity with the above, The Thrift is organized, and is designed to aid in the work carried on at Pratt Institute, but it is not conducted by the Institute, nor is the Institute responsible for it.

BENEFITS.

Any person, whether connected with Pratt Institute or not, is entitled to the benefits of The Thrift upon complying with the regulations, with the understanding, however, that the management may refuse to accept any account, or at any time have full power to limit or close an account, by giving notice at the last known place of residence of the depositor. Upon giving such notice interest shall cease.

Accounts may be held by minors, and by trustees and guardians on behalf of others; and by married women in their own names, and for their separate use, and they may sign receipts for interest and principal.

The work of The Thrift divides itself into three branches, the INVESTMENT BRANCH, the DEPOSIT BRANCH, and the LOAN BRANCH. Persons may take advantage of any branch without becoming identified with the others.

INVESTMENT BRANCH.

The Investing shares of The Thrift to which no liability attaches, are \$150.00, payable at the rate of \$1 per month for ten years. The monthly payments on each share amount in ten years to \$120.00, and the accumulated interest at the rate of 5 per cent. per annum to \$30, making \$150 in all; in addition to which, provided the installments are regularly paid, each share, at the end of the ten years, will be entitled to a premium of \$10 per share more. In other words, a monthly payment of \$1 will amount, with interest and premium, to \$160 at the end of ten years, or about 6 per cent. per annum on the subscription paid to The Thrift.

\$150.00 in one sum pays up a share in full, and when this payment has been made, the interest is payable half-yearly, at the rate of 4 per cent. per annum. If the interest is not withdrawn it will be added to the principal. At the end of ten years each share will be entitled to the same premium as that receivable by persons who pay for their shares by installments.

Payments on account of shares by installments draw interest from the first day of the month following the date of deposit. Payments may be made in advance from time to time, and the proper amount will be credited each month as it becomes due, or if desired, the number of shares may be increased. A fine of two cents a share per month will be charged on overdue payments.

Applications for investment must be made on a blank form furnished by The Thrift. The investment fee is fifty cents, payable with the application.

Accounts may be withdrawn at any time; and although The Thrift may, under its rules, require one month's notice, it hopes to be able to repay subscriptions on demand, and without notice. No interest will, however, be allowed on shares payable by installments if they be withdrawn within two years of their issue.

Table showing how money may be accumulated.

One share at \$1.00 per month, involving a saving of 4 cents per day for 300 days, amounts, with interest and premium, at the end of ten years, to \$160.00.

No. of shares.	Saving—		Total.
	Per month.	Per day.*	
1	\$1.00	\$.04	\$160.00
2	2.00	.08	320.00
3	3.00	.12	480.00
4	4.00	.16	640.00
5	5.00	.20	800.00
10	10.00	.40	1,600.00
15	15.00	.60	2,400.00
20	20.00	.80	3,200.00

* About.

DEPOSIT BRANCH.

Accounts will be open for sums of \$5.00 and over, and subsequent deposits will be received at any time, in sums of not less than \$1.50.

On making the first deposit, the depositor shall be required to signify his assent to the Rules and Regulations of The Thrift by signing his name thereto. A fee of twenty-five cents will be charged at the time of opening an account.

No sum less than three dollars shall be withdrawn from the principal of any account except to close the account.

At the regular meetings of the Advisory Council in March and September of each year, or at any adjourned or special meeting in the same months, the Council shall order to be paid to depositors, at such times as it may designate, such interest or dividends as the interests of The Thrift will, in its judgment, permit, on all deposits amounting to \$5.00 or over; the interest to be computed from the first of the month following the date of deposit, and cease on the first of the month preceding the date of withdrawal. No interest, however, will be allowed on accounts that have not been on the books for three months, or on fractional sums of \$5.00.

All interest to which any depositor may be entitled on the first of April and October in each year shall be added to his deposits, and from thenceforth shall be deemed principal.

STAMP SYSTEM.

For the purpose of extending the benefits of The Thrift, and as a further means of enabling persons to save small amounts regularly, the stamp system which has been in successful operation in Europe, as well as in this country, has been adopted. Five, ten, twenty-five, and fifty cent stamps will be issued, and these can be purchased at any time during the month at the principal office of The Thrift, or at the branch libraries and different associations with which PRATT INSTITUTE is connected, or which it may establish.

These stations are only for the sale of the stamps; but money equal to the total amount of stamps attached to a stamp card may be withdrawn upon surrender of the card at the station from which it was issued, or at the office of The Thrift on Ryerson Street. The stamps must be purchased and affixed to the cards.

Stamps are to be attached to stamp cards, which will be received as payments on "Investment" or "Deposit" accounts, and the amount transferred to the depositor's pass book, when presented by the depositor at the office of The Thrift.

LOAN BRANCH.

Sums of any amount will be loaned for the purchase of private houses, shops, and other real property in Brooklyn, but it is the special object of The Thrift to encourage the purchase of dwelling houses by persons for their own occupation.

The amount which will be advanced will be regulated according to the valuation of the property by The Thrift officials; and of this value, fifteen per cent., at least, must be provided in advance by the one wishing to obtain a loan.

The actual cost in connection with the loan,—such as examination of property, searching records, guaranteeing titles, etc., will be charged, which sum, if desired, may be added to the loan.

Loans will be repayable by monthly installments, commencing on the first day of the month following the date of the mortgage, or in any other manner that may be arranged, so that the repayments shall not extend over fourteen years.

As long as the installments are paid regularly, the loan cannot be disturbed; but with the consent of the Advisory Council the borrower may at any time make additional payments on account of the advance, and thus either shorten the period during which the installments are payable, or reduce their future amount; or on like consent the mortgage may be canceled at any time by paying the present value of the future installments.

Loans are to be secured by first mortgage upon the property, together with assigned life insurance equivalent to one-half the amount of the loan.

Table showing the monthly payments required, cost of loan, etc., for a loan of \$1,000, for a period of ten years.

	Interest on loan.		
	5 per cent.	5½ per cent.	6 per cent.
Monthly payments.....	\$10.80	\$11.06	\$11.33
Total payments, 10 years	1,296.00	1,327.20	1,359.60
Amount borrowed.....	1,000.00	1,000.00	1,000.00
Actual cost of loan.....	296.00	327.20	359.60
Actual cost of loan per year	29.60	32.72	35.96
Actual cost of loan per cent	3	3½	3¾

As every application for an advance is considered on its merits, it is impossible to state the amount which will be loaned, or to fix the rate of interest, until the property has been inspected by The Thrift's official; but in all cases applicants will be dealt with on the most liberal terms consistent with security.

THE DEPARTMENT OF AGRICULTURE.

The announcement is made that training is to be given in gardening, tree-culture, and general farming, in the New Department of Agriculture, which is to be opened under the direction of a graduate of Cornell, skilled in these industries.

THE PROPOSED ALLIANCE WITH THE PRANG EDUCATIONAL COMPANY.

The coöperation between the Pratt Institute and the Prang Educational Company of Boston, Massachusetts, which was referred to in the letter from Mr. Perry, and described in the address of Mr.

Charles M. Pratt, the present President of the Institute, forms the latest outgrowth of the instrumentalities set on foot by the founder of the Institute for the promotion of art industrial knowledge among the people of the United States; for this last movement is as wide embracing as the continent of America. The following is the Circular referred to, setting forth the plans of the two Institutions, which promise much for the general training of public school teachers throughout the country.

ART AND INDUSTRIAL EDUCATION.

COÖPERATIVE EDUCATIONAL WORK BY PRATT INSTITUTE AND THE PRANG EDUCATIONAL COMPANY.

The attention of teachers is respectfully invited to a coöperative undertaking by Pratt Institute and The Prang Educational Company, for the promotion of Art and Industrial education in public schools.

The enclosed circular from Pratt Institute outlines the general features of this undertaking, and it will be observed that provisions have been made for three lines of work:—

First. For the instruction of regular grade teachers throughout the country in the elements of Art and Industrial education.

Second. For the training of Directors of these subjects for public schools.

Third. For presenting to the people through public exhibitions, the nature and importance of Art and Industrial education in public education.

These three lines of work are to be conducted in harmony with each other, and it is believed that no more important work has ever been undertaken in this country by any Institution or Educational Association.

Of these three lines of educational work, the first two are of special interest to teachers. Careful consideration is therefore invited to the broad and practical provisions that have been established for bringing sound instruction in these new branches of study within the reach of all teachers throughout the United States; and also to the facilities offered to teachers possessing the necessary qualifications for Directors or Supervisors of these new branches in public schools, to prepare for such positions.

I. PROVISIONS FOR THE INSTRUCTION OF GRADE TEACHERS THROUGHOUT THE COUNTRY IN THE ELEMENTS OF ART AND INDUSTRIAL EDUCATION.

PRANG'S NORMAL ART CLASSES.

[Their Purpose, their Faculty, their Methods, their Results.]

Prang's Normal Art Classes were established in 1887, for the purpose of bringing within the reach of teachers actively engaged in public school work sound normal instruction in the new studies of Form, Drawing, and Color. They present the only practicable means yet devised for bringing instruction in these branches within the reach of the great body of public school teachers. The courses of study have been prepared in consultation with the most eminent leaders in Art and Industrial Education in this country. The staff of instructors, with their assistants, comprises persons of thorough technical and educational training, and wide public school experience.

The present Faculty and Board of Advisers are as follows:—

Directors.—Louis Prang, John S. Clark, Mary Dana Hicks.

Instructors.—Kate McCrea Foster, Augusta L. Balch, Helen A. Richards, Lizzie M. Nelson, Ellen Miller, Edna A. Sargent.

Advisers on methods and courses of study.—Art and Technical Schools: Walter S. Perry, Director of Art Department, Pratt Institute, Brooklyn, N. Y. (formerly Supervisor of Drawing, Public Schools, Worcester, Mass.); Katherine E. Shattuck, Normal Art Instructor, Pratt Institute, Brooklyn, N. Y. (formerly Supervisor of Drawing, Public Schools, Fall River, Mass.).

Manual Training Schools: Charles R. Richards, Director of Mechanic Arts Department, Pratt Institute, Brooklyn; C. M. Woodward, Ph. D., Director of Manual Training School, Washington University, St. Louis; H. H. Belfield, Ph. D., Principal of Chicago Manual Training School.

Public Schools: Miss Josephine C. Locke, Supervisor of Drawing, Public Schools, Chicago; Prof. Walter S. Goodnough, Supervisor of Drawing, Public Schools, Brooklyn; Miss Ada M. Laughlin, Supervisor of Drawing, Public Schools, St. Paul; Mrs. T. E. Riley, Supervisor of Drawing, Public Schools, St. Louis; Miss Sara A. Fawcett, Supervisor of Drawing, Public Schools, Newark, N. J.; Miss Stella Skinner, Supervisor of Drawing, Public Schools, New Haven, Conn.

THE WORK OF THE CLASSES.

Prang's Normal Art Classes comprise four distinct classes, each covering a particular line of public school work. These are respectively designated as Class A, Class B, Class C, and Class D.

Class A is intended for teachers in Primary Schools. The course of study in this class is in harmony with the kindergarten methods which now characterize the best primary instruction. It includes a full course of Form Study, Color Study, Clay Modeling, Paper Folding and Cutting, Making and Drawing suitable for primary grades in schools where instruction of the highest character is desired. Special attention is paid to the relation of this work to the regular school work in Language, Number, Place, and Elementary Science. The work is divided into ten sections, a period of twelve months being allowed for its completion. An examination is given after the completion of these ten sections, and if satisfactorily passed a certificate is awarded to the graduate.

Class B is intended for teachers in Grammar Schools. In order that students may understand the foundations on which thorough grammar school work is based, the work of this class includes in its earlier lessons the work of Class A. Beyond this, however, the work of Class B so develops the subjects of Form Study, Drawing, and Color as to fully meet the examination requirements in these subjects for teachers in grammar schools where the highest standards of work are maintained. The application of its exercises to the regular school work in Arithmetic, Natural Science, History, and Literature is made an important and helpful feature of the course. Collateral reading, in the directions of educational principles and methods, and of the history of Art, is laid out for those who can devote time to such reading.

The work of Class B is divided into twenty sections, a period of twenty-four months (two years) being allowed for its completion. An examination is made on the completion of the work, and a certificate awarded to each satisfactory graduate.

For those teachers who wish to fit themselves for Directors or Supervisors of Form Study, Drawing, and Color, or for work in the Fine Arts, Class B affords training directly preparatory for the best advanced technical instruction in both these directions. See Section II. of this circular for particulars.

Class C is intended for:—

(a) Graduates of Class B who do not intend to enter any large technical school, but wish to pursue, on the correspondence plan, advanced studies in the same lines as those of Class B.

(b) Graduates of Art Schools and others, who, having had good technical art training, desire to secure instruction in the educational principles and methods of work that are necessary for public school service.

The work of Class C is divided into several sections, from which students, after consultation with the Directors, may elect a certain number of subjects.

Class D, or the "Introductory" Class, is intended for those teachers who may be chosen from the regular corps in small towns where Form Study, Drawing, and Color are being first introduced into the schools, to take charge of the new work. In such cases the School Board appoints some one teacher to receive instruction in behalf of the whole body of teachers, and to give this instruction to the other teachers.

The work of Class D comprises ten sections, to be covered within the space of one year (twelve months). The course of study provides for the instruction of the individual teacher, and for her periodical meetings with the whole corps of teachers in different grades.

METHODS OF INSTRUCTION.

* The methods and courses of study in all these Normal Art Classes are in accord with the most successful experience of the ablest instructors in the country.

Definite printed requirements for each section of the chosen course are sent to the student, together with the necessary text-books and materials. Included in the work required from each student are written outlines of class exercises embodying the student's idea of the best method of presenting specified subjects to children of appropriate grade. The work of the student is done at her home, and forwarded to the Directors for criticism. It is considered from both the technical and the educational stand-points; full criticisms and suggestions are then typewritten and sent back to the student, together with the criticised work.

It is thus possible for any intelligent and earnest teacher to qualify herself for doing good class-room work in Form Study, Drawing, and Color, and this without interfering with her regular duties or involving any large expense. The correspondence plan of normal instruction has proven itself thoroughly successful in this work. Special pains are taken to bring out clearly the practical relations of the study of Form, Drawing, and Color to other branches of school work; and through this feature of the lessons students gain an insight into new and advanced methods of general school instruction that is of great benefit in their work in other studies.

THE RESULTS.

A careful examination of the results of this method of instruction will show that Prang's Normal Art Classes furnish a perfectly practicable means—and the only practicable means yet devised—for bringing sound normal instruction in Form, Drawing, and Color to the great body of teachers now actively engaged in public school work. The success of these classes is an established fact. They are approved and indorsed by the leading educators of the country. The hundreds of students who have availed themselves of the opportunities afforded by these classes speak with cordial appreciation of the thoroughness and the practical helpfulness of the instruction they have received. Extracts from a few of the letters of such students are enclosed herewith.

II. PROVISIONS FOR TRAINING DIRECTORS AND SUPERVISORS OF ART AND INDUSTRIAL EDUCATION.

PRATT INSTITUTE AND ITS FACILITIES FOR NORMAL ART INSTRUCTION.

Pratt Institute, at Brooklyn, N. Y., is one of the largest Art and Technical Institutions in the country. It was the first institution in America, if not in the world, to recognize in the education of the people the equal claims of Literature, Art,

Science, and Labor. Through the munificent endowment of its founder, the late Mr. Charles Pratt, it is thoroughly equipped in all its various departments, and is enabled to secure the best instructors.

The Art Department of the Institute furnishes instruction of the highest character in Fine Art and in Industrial Art, with ample provisions for Normal Art instruction. In the Fine Art section great attention is paid to studying from life. In Drawing, Painting, and Modeling, students have a great deal of practice in working from the head and from the full-length figure. The Industrial section embraces instruction in the various features of Mechanical and Architectural Drawing and Constructive Design, with exceptional provisions for practical Decorative Design.

NORMAL ART INSTRUCTION AT PRATT INSTITUTE.

Pratt Institute has recognized the importance of having Art specialists well trained on both the educational and technical sides, to direct and supervise the studies of Form, Drawing, and Color in the public schools. The facilities for Normal Art training at the Institute are of an exceptionally broad and practical character. The Normal Course covers a period of three years. The regular normal instructors are persons who, in addition to thorough technical Art knowledge, possess practical knowledge of educational methods and of public school conditions. While the educational and normal instruction in this section is of a very broad and practical character, the students have exceptional advantages in Fine and Industrial Art instruction, inasmuch as for the advanced work of the Course in Modeling, Light and Shade and Color, Decorative Designing, and Mechanical and Architectural Drawing, they are brought under the special instructors in the Fine Art and the Industrial Art sections. In addition to all these advantages, students have access to the Institute Library, with its well-chosen selection of works on Art and Education, and also to the Institute Museum, with its examples of Fine Art and Industrial Art. Normal Art students at this Institution, therefore, are enabled to get much more than even fine normal and technical Art training for public school work. During their studies they are able to see in the various educational and industrial departments of the Institute the practical applications of Art to general education and to industry, so that in going out to direct Art and Industrial work in public schools they are enabled to interpret this work intelligently in its practical relations to education, to industry, and to social life.

PRANG'S NORMAL ART CLASSES A GREAT HELP IN PREPARING FOR SUPERVISORY WORK, OR FOR PRACTICAL ART WORK AT PRATT INSTITUTE.

There is a great demand for well-trained Directors and Supervisors of Form Study, Drawing, and Color in public schools. It is found, however, that a practical knowledge of educational methods and experience in public school management are as indispensable to success as technical art knowledge. There are many teachers engaged in regular grade work who have precisely the educational knowledge and experience which, if combined with thorough technical training, would assure them success and public recognition as Directors and Supervisors of these new studies.

Teachers possessing the general qualifications for such positions will find Prang's Normal Class B of great material aid in preparing at Pratt Institute for supervisory work. The course of study in this class has been brought into complete harmony with and covers many of the elementary features of the Normal Course at the Institute. Teachers, therefore, passing from this class to the Normal Department at the Institute, will be enabled to take during one, two, or three years a much broader and fuller course of instruction than would be possible without such preliminary preparation.

Graduates from the Prang Class B desiring to prepare for practical Art work at the Institute, rather than for supervisory work, will find the instruction they have received of great assistance either in Fine Art study or in the study of any branch of Industrial Art.

PRANG SCHOLARSHIPS AT PRATT INSTITUTE.

In order to encourage regular grade teachers who have the necessary qualifications and ambition to prepare themselves thoroughly for supervisory work in Form Study, Drawing, and Color, there have been established at Pratt Institute ten annual scholarships of one hundred dollars each, with one year's free tuition at Pratt Institute. These scholarships give the holders admission to any of the day or evening classes of the Art Department. These scholarships will be awarded in June of each year to the ten students of Prang's Normal Art Class B who, while engaged in public school duties, have within the year graduated with most credit from that class.

CONDITIONS OF ELIGIBILITY FOR THE PRANG SCHOLARSHIPS AT PRATT INSTITUTE.

These scholarships have been established for the benefit of teachers engaged in public school work, and the conditions are as follows :—

1. These scholarships are limited to persons actually engaged in public school teaching.

2. Any public school teacher now a member of Prang's Normal Art Class B, or any public school teacher joining Class B after Oct. 1, 1891, may, by signifying such a desire, be enrolled on the list of scholarship candidates.

3. Public school teachers now members of Prang's Normal Art Classes other than Class B, have the privilege of transferring their membership to Class B, and thus becoming eligible candidates.

4. Present students who entered the Normal Art Classes previous to Jan. 1, 1891, if desirous of competing for scholarships, must complete the work and examination of Class B by June 1, 1893.

5. Present students who have entered the Normal Art Classes since Jan. 1, 1891, if desirous of competing for scholarships, must complete the work and examination of Class B by June 1, 1893.

6. Competitors for scholarships entering Class B after October 1, 1891, will each be allowed a maximum period of two years (twenty-four months) in which to do the whole of the course. The work may be done in as much less time as circumstances make possible in any case, but it must positively be completed within two years from the time of entrance.

7. An individual examination is given to each student immediately on the completion of the course. Students completing their work and passing examination later than June 1 in any given year will receive graduation certificates as soon as their examination is satisfactorily concluded ; but their records can not be compared with those of other graduates until the following June.

AWARDING OF SCHOLARSHIPS.

Full records, copies of all criticisms and correspondence, and distinct estimates of each student's consecutive lessons and her final examination are kept on file by the Directors of Prang's Normal Art Classes.

In June of each year these records and examinations will be carefully examined and compared, and decision rendered as to the ten most worthy candidates for the annual scholarships.

In making the awards, knowledge and intelligent application of educational principles will be considered, as well as technical skill in drawing.

The following persons, in conference, will make the scholarship awards: Mr. Walter S. Perry, Director of the Art Department, Pratt Institute, Brooklyn; Miss Katherine E. Shattuck, Normal Art Instructor, Pratt Institute, Brooklyn; Mrs. Mary Dana Hicks, Director of Prang's Normal Art Classes, Boston.

Announcements of the awarded scholarships will be made by July 1, of each year. The school year at Pratt Institute opens in September of each year.

From the foregoing statement it will be seen that this coöperative educational undertaking between Pratt Institute and the Prang Educational Company is one of great importance to public school teachers, as well as of much significance to public education.

That Art and Industrial education are to become integral features in our system of public education will not be questioned by any person who takes an intelligent view of the educational and social tendencies of our time. The chief obstacles to the general introduction of these subjects into the schools are found in the fact that the regular grade teachers are rarely qualified to give instruction in them, while the persons are few who possess sufficient technical knowledge of these subjects combined with a knowledge of educational methods and school management, to wisely direct the instruction in the schools.

To help in removing these obstacles is one of the principal objects of this coöperative undertaking; and it is hoped that the regular teachers throughout the country will see in the means provided for carrying to them sound instruction in these new branches while engaged in their regular school work, and in the opportunities offered at Pratt Institute to prepare for Directors and Supervisors of these subjects in the schools, such broad and practical provisions for their benefit that they in turn will coöperate to make the undertaking a benefit to public education.

For further particulars relative to this undertaking, or in regard to Prang's Normal Art Classes or the Prang Scholarships at Pratt Institute, address,

PRANG'S NORMAL ART CLASSES,

7 Park Street, Boston, Mass. Nov. 1, 1891.

PRATT INSTITUTE, BROOKLYN, N. Y., THE PRANG EDUCATIONAL COMPANY, BOSTON, MASS.

With the final general statement of the catalogue, the announcement of the cost of tuition in the various schools and classes, and the greatly enlarged list of officers and Instructors, the account of this most interesting institution closes. With such a purpose and such a history of rapid development, who can venture to limit the extent and variety of its future growth, or to set bounds to its influence for good? What better monument could man desire than to be remembered among men as the Founder of such a perennial source of benefits to his fellow-men?

GENERAL CONDITIONS OF ADMISSION—ATTENDANCE.

Except in special cases, students are not admitted to any of the departments of the Institute until they have attained the age of fourteen years.

The requirements for admission vary according to the department; but, in general, it may be said that applications are accepted when the head of the department can satisfy himself, either by examinations or otherwise, that the applicant is fitted to take up the work which he wishes to pursue.

Those wishing to enter the Institute are expected to fill out application blanks, and to leave them at the General Office previous to the beginning of the term. Applicants who receive notice of acceptance will present this, with the tuition fee.

at the Office, where they will be given a student's ticket admitting them to the department for which application has been made. It is expected that all applicants will be present and ready for work at the hour appointed for the beginning of the term.

Promptness and regularity of attendance are absolutely insisted upon. Continued absence, without notification, will be considered a permanent withdrawal.

TUITION.

Tuition is payable in advance, and no part of the tuition fee will be refunded to pupils who withdraw, or are dismissed from the Institute before the close of the term for which the fee is paid.

The authorities of the Institute reserve to themselves the right to increase the rates of tuition if it be found advisable, but efforts will be made to render possible the admission of all deserving applicants.

BOARD—LUNCH-ROOM.

No provisions are made for board at the Institute, but students coming from out of town will be referred to boarding places in convenient parts of the city.

In the basement of the Main Building is a commodious Lunch Room where simple meals, well served, are furnished noon and evening, at moderate prices. The Lunch Room is under the special care of a competent caterer, and is in no way connected with the cooking schools of the Institute.

VISITING DAYS.

In order to prevent interruption to the work of the classes, it has been found necessary to limit the hours for the inspection of the buildings to Monday, Wednesday, and Friday, from 10:00 a. m. to 12 m., and from 3:00 to 5:00 p. m.; also during the fall and winter terms from 7:30 to 9:30 p. m. of the same days.

OFFICE HOURS.

Daily, except Saturday, from 9 a. m. to 5 p. m.; Saturday, from 9 a. m. to 3 p. m.; evening: Monday, Wednesday, and Friday from 7:30 p. m. to 9 p. m.

All necessary information may be obtained upon application in person or by letter at the office of the Institute, on Ryerson Street.

Address F. B. PRATT, Secretary.

Registration for the year 1890-91.

	Day.	Evening.	Total.
Technical High School Department.....	109		109
Art Department.....	455	316	771
Department of Domestic Science.....	1,019	506	1,525
Department of Commerce.....	129	181	310
Music Department.....	71	233	304
Department of Mechanic Arts.....	67	222	289
Library Training.....	38		38
Total.....	1,883	1,458	3,341
Number enrolled in more than one department.....			109
Individuals enrolled.....			3,232

TUITION.

The school year is divided into three terms for day classes, and two terms for evening classes.

The tuition, as given below, unless otherwise stated, is for a single term.

	Day Classes.	Evening Classes.
TECHNICAL HIGH SCHOOL DEPARTMENT.		
First year, per term	\$10.00	.....
Second year, per term	15.00	.....
Third year, per term	20.00	.....
ART DEPARTMENT.		
Morning classes, five half days each week	8.00	.....
Afternoon classes, two half days each week	5.00	.....
Evening classes, three evenings each week		\$5.00
Life classes, morning, five half days	12.00	.....
Life classes, afternoon, three half days	8.00	.....
Life classes, evening, three evenings		8.00
Architectural drawing, shop work, etc., five whole days each week	15.00	.....
Mechanical drawing, shop work, etc., five whole days each week	15.00	.....
DEPARTMENT OF DOMESTIC SCIENCE.		
Cookery; one lesson per week.		
First course	5.00	2.00
Second course	8.00	4.00
Cookery for invalids	5.00	3.00
Girl's Saturday morning class	2.00	.....
Fancy cookery (materials extra)	15.00	.....
Private lessons, each (materials extra)	2.00	3.00
Normal class (daily)	20.00	.....
Household economy; one lesson per week	3.00	1.00
Laundry; one lesson per week	3.00	1.00
Hygiene and home nursing; one lesson per week	5.00	2.00
Sewing; two lessons per week	5.00	2.00
Sewing (children's class); one lesson per week	2.00	.....
Special course, five lessons per week	15.00	.....
Dressmaking; two lessons per week.		
First course	10.00	5.00
Second course (including chart)	15.00	10.00
Third course	15.00	10.00
Special course, five lessons per week	30.00	.....
Millinery; two lessons per week.		
First, second, and third courses, each	10.00	5.00
Special course, five lessons per week	30.00	.....
DEPARTMENT OF COMMERCE		
Phonography	8.00	6.00
Phonography— Special afternoon class	5.00	.....
Typewriting	8.00	6.00
Bookkeeping		
Arithmetic and penmanship		
English		
Spanish		
DEPARTMENT OF MECHANIC ARTS.		
<i>Six months.</i>		
Machine shop	30.00	20.00
Carpentry		
Blacksmithing		
Bricklaying		
Plumbing		
Plastering		
Painting (house)		
Painting (fresco)		
Painting (sign)		
First year: carpentry turning		
Second year: forging		
Third year: machine shop		
<i>Per term.</i>		
Geometry		5.00
Chemistry		10.00
Electrical construction: two evenings per week		8.00
Steam		
Strength of material		8.00
Machine design		
Building construction		
Metallurgy		5.00

	Day Classes.	Evening Classes.
MUSIC DEPARTMENT.		
Day classes, two lessons per week. Evening classes, one lesson per week.		
First, second, and third grades sol-fa, and elementary grade staff notation, each...	\$3.00	\$2.00
Other classes	5.00	2.00
Normal course	10.00	
Choral society, annual dues, \$2.00		
LIBRARIES.		
Library training class		
Literature class		
Reference work		
Cataloguing class		
} each		5.00

BOARD OF TRUSTEES.CHARLES PRATT, *President*.*

CHARLES M. PRATT.

FREDERIC B. PRATT, *Secretary and Treasurer*.**FACULTY.**Frederic B. Pratt, *Chairman*.Norman P. Heffley, *Secretary, Director of Department of Commerce*.William O. Pratt, *Director of Technical High School Department*.Walter S. Perry, *Director of Art Department*.Harriet S. Sackett, *Director of Department of Domestic Science*.Charles R. Richards, *Director of Department of Mechanic Arts*.Margaret Healy, *Director of Libraries*.**INSTRUCTORS AND ASSISTANTS.****TECHNICAL HIGH SCHOOL DEPARTMENT.**

William O. Pratt, A. M.	Director
Charles M. Allen, A. M.	Instructor in Physics and Chemistry
James R. Campbell, A. M.	Instructor in Literature and Political Science
M. Elizabeth Vandercook	Instructor in English and History
Frederick Reed, A. B.	Instructor in Mathematics and French
William E. Chancellor, A.	Instructor in Latin and Natural Science
Walter V. Holt	Instructor in Elocution
Helen H. Frothingham.	Instructor in Physical Culture

ART DEPARTMENT.

Walter S. Perry	Director. Instructor in History of Art
S. Herbert Adams †	Instructor in Clay-Modeling, Life Drawing
Lucy A. Fitch	Instructor in Antique, Anatomy, Color, Costume Class
Katherine E. Shattuck	Instructor in Freehand Drawing, Normal Methods
Mary Allis Hurlbut	Instructor in Freehand Drawing, Sketching, Color
Ethelyn K. Fenner †	Instructor in Freehand Drawing, Color
J. Frederick Hopkins †	Instructor in Mechanical Drawing, Instrumental Perspective
C. Frank Edminster †	Instructor in Architectural Drawing
George A. D. Tew	Instructor in Technical and Applied Design
Horatio B. Cunningham †	Instructor in Wood-carving

* Mr. Charles M. Pratt succeeded to the Presidency after the death of his father, which occurred May 4, 1891.

† Also Instructor in Technical High School Department.

Mary E. Stocking	Instructor in Art-needlework
Lina Eppendorff	Instructor in Art-needlework
Emma R. Brill	Assistant in Freehand Drawing
Harriette Bowdoin	Assistant in Freehand Drawing
Florence Walker	Assistant in Freehand Drawing
Charles A. Mead	Assistant in Mechanical Drawing
Hendrick Van Ingen	Assistant in Architectural Drawing
Harriet M. Cox	Secretary to Department

DEPARTMENT OF DOMESTIC SCIENCE.

Harriet S. Sackett	Director. Instructor in Household Economy
Nellie Campbell Bedford	Instructor in Cookery, Normal Class
Isabel D. Bullard	Instructor in Cookery, Laundry
Margret T. Hammond*	Instructor in Cookery
Helen M. Burgess*	Instructor in Dressmaking
R. Alice McPhee	Instructor in Dressmaking
Addie Louise Mead	Instructor in Dressmaking
Effie King*	Instructor in Millinery
Clara B. Dewey	Instructor in Millinery
Eunice R. Campbell*	Instructor in Hand and Machine Sewing, Garment Making
Clara Trumbull*	Instructor in Sewing
Glentworth R. Butler, M.D.*	Instructor in Hygiene and Home-nursing
Mary C. Lovering	Instructor in Chemistry, Normal Class
Aletta V. W. Schenck	Assistant in Dressmaking
Elizabeth McJunkin	Assistant in Dressmaking
Sophie W. Hamilton	Assistant in Dressmaking
Jessie H. Ditmars	Assistant in Dressmaking
Kate M. Clements	Assistant in Dressmaking
Minnie Oliver	Assistant in Millinery
Jennie F. Brett	Assistant in Sewing
Minnie Hutchinson	Assistant in Sewing
Ada A. M. Pratt	Secretary to Department
Sophia E. White	Secretary to Department

DEPARTMENT OF COMMERCE.

Norman P. Heffley	Director
Lulu Nase Esmond	Instructor in Phonography
Arabel Gillespie	Instructor in Phonography
Caroline Wylie	Instructor in Phonography
Frank W. Stanley	Instructor in Phonography
Thomas P. Heffley	Instructor in Typewriting
Emma B. Ludlow	Instructor in Typewriting
Howard Keeler	Instructor in Bookkeeping

DEPARTMENT OF MECHANIC ARTS.

Charles R. Richards	Director
William E. Drake, B. S.*	Instructor in Woodworking
William C. Stimpson*	Instructor in Molding and Forging
Henry C. Brown, Jr.*	Instructor in Machine Shop Work
George H. Meserole*	Instructor in Tinsmithing
Frank E. Sanborn, B. S.*	Instructor in Mechanics

*Also Instructor in Technical High School Department.

Frederick W. Dunbar, B. S.	Instructor in Electrical Construction
Chas. H. Tiedman	Instructor in Carpentry
William Rea	Instructor in Machine Shop Work
Joseph J. Ryan	Instructor in Bricklaying and Plastering
John J. Ford	Instructor in Bricklaying
Matthew E. Ogden	Instructor in Plumbing
George Heath	Instructor in Plumbing
P. William Nelson	Instructor in Fresco Painting
Thomas Taylor	Instructor in House Painting
Edwin W. Foster	Secretary to Department

DEPARTMENT OF MUSIC.

John J. Dawson	Director
Lillie J. Hooker *	Assistant in Music
Ella L. Fitch	Assistant in Music

DEPARTMENT OF LIBRARIES.

Margaret Healy, A. B.	Director
Mary W. Plummer	Librarian
Agnes E. Little	Assistant in Library
Mary C. Mosman, B. S.	Assistant in Library
Sophia L. Bacon	Assistant in Library
L. Atalanta Ramsdell	Assistant in Library
Happy E. Branch	Assistant in Library
Susie S. Hawkins	Assistant in Library
Annie McKenzie	Assistant in Library
Julia C. Sturges	Assistant in Library
Elizabeth B. Faucon	Assistant in Library
Helen J. Aitken	Assistant in Library
Hettie D. Essler	Assistant in Library
Aletta B. Witte	Assistant in Library
Edith France	Assistant in Library

KINDERGARTEN.

Hannah D. Mowry	Director
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GENERAL OFFICE, ETC.

Lily Norton	Bookkeeper
Jenny B. Murphy	Assistant Bookkeeper
J. Hollis Gibson	Assistant Manager of The Thrift
George J. Morgan	Bookkeeper of The Thrift
S. Louise Girod	Stenographer
Louis E. Ackerman	Assistant in Museum
William H. Dutcher	Buyer
Frank M. Black	Superintendent of Buildings and Restaurant
Sarah E. T. Black	Assistant Superintendent
Joseph Foster	Engineer

* Also Instructor in Technical High School Department.

THE DREXEL INSTITUTE OF ART, SCIENCE, AND INDUSTRY, PHILADELPHIA, PENNSYLVANIA.

This Institution, an account of which finds its fit place in the present chapter—since it is a noble example of the devotion of private wealth to public use, such as has made the names of Peter Cooper, and Charles Pratt, honored, wherever knowledge of their philanthropic benevolence extends;—has, as yet, little of history to record.

In the lavish expenditure upon the interior arrangement of the building to provide whatever would serve to promote its educational purposes, it equals, if indeed it does not exceed, the provisions so largely made in the building of the Cooper Union, and in the buildings already erected for the uses of the many departments of the Pratt Institute, while in all artistic qualities it far surpasses them; showing, in every direction, delightful illustrations of the charming effects resulting from the successful applications of Art to Industry. The elevation, either of the Cooper Union, or of the Pratt Institute, presents little claim to beauty of proportion, or of design; the claim of these buildings architecturally is to be found only in their fitness for use.

In contrast with these, the exterior beauty of the building erected for the home of the Drexel Institute, which is in itself a striking instance of the happy result when Art weds Utility, is of an excellence beyond comparison. Whether considered in its external proportions, or in the restrained yet abundant use of ornament which characterizes this splendid structure, it must rank as a triumph of artistic architecture; trebly to be appreciated for its obedience to the laws of classic proportion, in these days in which the heaven-scaling tower of Babel seems to embody the only ideal to which City architects aspire.

In its fair proportion and general impression, this building suggests (though constructed of such different material, and somewhat smaller in its ground plan while widely diverging in details) the beautiful building of white marble, with its shadowy recessed portico of carved Corinthian columns, in which the General Post Office Department finds a home in Washington; itself one of the most charming examples of restrained and classic architecture to be found in that city of noble buildings.

As an example of the artistic possibilities of brick and terra cotta, when used with a keen appreciation of the effects which depend on both harmony and contrast in color and also, as showing how the

forms of the Renaissance may be admirably adapted to our modern needs, this building is worthy of serious study. Observe, too, the dignity imparted to the façade by the noble proportions of the lofty arched portal, lavishly enriched by the portrait busts of those who have left great names in the history of Art, or Science;—a fitting entrance to this palace of Art, Industry, and Education.

For some years it had been rumored that Mr. Anthony J. Drexel, the well-known banker of Philadelphia, designed to found and endow an educational institution; beyond this, little was known, though much was surmised. The building itself was begun in 1890, thus giving proof that there was some foundation for the popular belief, but there was nothing known generally of the definite use to which the building was to be devoted. It was known that Mr. George W. Childs, the warm friend of Mr. Drexel, was greatly interested in his plans. About this time Mr. Addison B. Burk, for many years actively connected with the management and direction of the Spring Garden Institute of Philadelphia, and one of the editors of *The Philadelphia Ledger*, Mr. Childs's paper, issued a four-page folio sheet containing an interesting concise report of various industrial and technical schools in Philadelphia, New York, and Boston; giving also a proposed plan for the Drexel Institute, with suggestions both as to the courses to be given, and as to the arrangements of the building. From this, though it had no other evident authorization beyond Mr. Burk's signature, it was clear that some kind of Industrial Education was to be given in the new institution. As the plans of the various departments have since been decided upon and several of them are already in full operation, the schedules of which will be here given, it is not necessary to quote from this tentative report with its suggestions.

In the autumn of 1890, Dr. James MacAlister, who had won distinction as the first City Superintendent of the Schools of Philadelphia, the school system of that city having before been under a different organization, suddenly resigned his position as a city official; as he had been called by Mr. Drexel, to assume the Presidency of his proposed Institute.

For more than a year, Dr. MacAlister, devoted himself assiduously to perfecting the educational plans of the schools and to supervising the arrangements and interior fitting up of the building; having a rare opportunity in thus being able to direct the adaptation of the rooms to their designated purposes. The result arising from Mr. Drexel's munificence, President MacAlister's supervision, and the genius and skill of the architect and builder,* is a veritable palace.

The impression made by the interior of this attractive building is no less striking than that of the exterior. Entering under the lofty

*The architects of the Drexel Institute were Wilson Brothers & Co., of Philadelphia. Mr. Joseph M. Wilson is the head of the firm.

portal arch to the spacious antechamber, with its beautiful marble columns, which opens into the great interior court flooded with light, wainscoted with marbles, with stately marble stairways leading to the grand audience room below, and to the several stories above, the whole space inclosed by arched galleries faced with white enameled brick, rising tier above tier, toward the crowning crystal roof; the arcades partly supported on pillars of beautiful marbles, there is an impression of space, freedom, and light, combined with the sense of luxury, suggested by the costly marbles and the beautiful statues standing in the court, which is as satisfactory as it is unusual.

Here is, indeed, a Palace of Art, but it is not the home of selfish luxury or the splendid abode of ennobled idleness. Here is the evidence and the result of wealth which even the wild-eyed anarchist might bless and the most enthusiastic socialist approve; for this is a palace of the people. All this splendor and luxury is provided for the children of the people. On either side of the antechamber wide entrances invite, on the one hand, to the great and increasing Library, where is stored a wealth of books; and, on the other, to the rapidly growing Museum, already rich with the products of the art industries of the centuries.

To-day, the child of the poorest citizen of Philadelphia, can have access here to such treasures of learning and of art, as even Girard, in his day, had that merchant prince of simple tastes so wished, could hardly have commanded; while the educational facilities here provided for the rising generation could then have nowhere been obtained.

It was the formal opening and dedication of this temple-palace of artistic learning and industry, that the friends of Education were summoned to attend on December 17th, 1891, when the building was so near completion as to justify occupation, and the plans of instruction were so perfected as to admit of the gradual opening of the different educational departments. This otherwise joyful occasion was darkened by the gloom of a great bereavement which had fallen upon the generous Founder of the Institute and his family, in the sudden decease of the beloved wife and mother, who had shared so fully in his far-reaching plans of benevolence to the community.

The absence of Mr. Drexel from this inaugural occasion was, therefore, deeply and doubly regretted.

Mr. George W. Childs, who, from the first, had been associated by Mr. Drexel with himself as a director of the Institute, and who now holds the position of Vice President of the Board of Managers, in the absence of Mr. Drexel, welcomed the invited guests.

The following account of the ceremonies and addresses is largely taken from that in the Philadelphia Ledger of December 18th, 1891, and partly from the New York Tribune, of the same date, and other Journals; the Press of the country giving me

of this notable event which had called together so large and distinguished an audience of well-known men and women, and which was unusual in its representative character: uniting as it did, all the great classes of American Workers and Thinkers;—Statesmen, Educators, Inventors, Merchants, Authors, Editors, and men from all the Learned Professions, High Officials of the State, and Nation, Presidents of the great Universities, Teachers in the Public Schools, Dignitaries of the Churches, and a multitude of private citizens, who had all met together to pay honor to the Giver and the Gift.

Considering the purpose of the Institution in its full significance, and the representative audience whose presence illustrated the widely extended interest in this latest development of the progress of the New Education, the occasion of these dedicatory ceremonies might almost lay claim to be reckoned as belonging to that class of events, which the Germans are wont to characterize as “era-making.”

The Tribune’s correspondent began the account as follows:

Philadelphia, Dec. 17 (Special).—The Drexel Institute has received the crown of dedication, and one more noble benefaction will soon enter upon the comprehensive work designed by its public-spirited founder. The name of Drexel, so long known, through father and son, in the financial world, and always honorably known, has recently become more prominently identified with charitable and philanthropic deeds of large scope; but the spirit which in these later days moves the hands of an affluent family to distribute its possessions by the million has long been recognized as existing within narrow limits, and as ever active in the accomplishment of good works. Anthony J. Drexel, the founder of the Drexel Institute, is one of the most modest of men. Though his business interests are world-wide, here he has himself always lived, shrinking from rather than inviting the glare of social distinction, and happiest in the domesticities of life. These have been rudely disturbed within the last few weeks by the death of his wife, a woman of equal modesty with her husband, but whose kind heart was a constant fountain of inspiration to him in all that he did or stood ready to do in the direction of succor and relief to those who were struggling and in want.

The ceremonies of dedicating the Institute to-day were stately to the point of solemnity; and a chord of pathos characterized the entire proceedings. The grief of Mr. Drexel was too recent to admit of his presence, and he frankly admitted to his more intimate friends that he doubted his ability to endure the strain that would necessarily be imposed. He visited the building, and in one of the classrooms received a number of friends who had come from a distance; but when the procession moved to the auditorium he remained behind. The popular interest in the occasion will be manifest in the fact that over 5,000 applications for admission tickets to the auditorium were received, but as the seating capacity was about 2,000, only that number was issued. The gathering was representative of the several elements of the thrifty and well-to-do population of Philadelphia. As a visitor from Boston remarked, it was a typical Philadelphia audience in all particulars; and throughout the two hours and a half, during which the exercises continued, the utmost attention was paid to everything that transpired. The arrangements were perfect and were carried out without unnecessary confusion and bustle. About one-half the seats were reserved, but if the holders did not present themselves before 2:50 o’clock (3 o’clock being the hour fixed for beginning the exercises), the holders of ordinary admission tickets were admitted, and the hall filled from the platform backward to the first row, in regular order. The first row, directly in

front of the stage, was reserved for members of the Drexel family; and these, ranged side by side and all dressed in deepest mourning, presented a striking feature. Mr. Drexel has fifteen grandchildren, and many of these, girls and boys of varying ages and sizes, were conspicuous in the family group.

The following few paragraphs descriptive of the scene are from the account in the Ledger, in which journal the addresses were given in full, as hereafter quoted:

The hour for the ceremony was 3 o'clock, but the invited guests began arriving two hours before that time, spending the interim in walking through the porticos, corridors, and the spacious covered court, from which latter rise two marble stairways leading to the upper floors. Class-rooms were inspected, the laboratories, the library, the reading rooms, gymnasium, photographic gallery and kitchens were visited, and with growing admiration the visitors inspected the compact machinery in the basement. Then they penetrated to the uppermost chambers, where heat and ventilating pipes are ramified, and their constant wonder was further excited by the skill with which even the necessary appliances of so elaborate a building were made available for class instruction. Even the decorations of façade, frieze, pillar, corridor, and court are directly ruled by this paramount thought. A thorough knowledge of the structure, its arrangement, its appliances, and its decorations would in itself comprise a liberal education. That was the universal expression of opinion.

A list of the more than 2000 men and women at the ceremonies would include many of the best known of the residents of Philadelphia, New York, Brooklyn, Baltimore, and Washington. The Vice President of the United States, Levi P. Morton, Attorney General W. H. H. Miller, Postmaster General John Wanamaker, Secretary of the Interior John W. Noble, and Commissioner of Education W. T. Harris, represented the National Government. Governor Pattison, Secretary of the Commonwealth Wm. F. Harrity, and Secretary of Internal Affairs Thomas J. Stewart, were some of the State officials present, while Mayor Stuart, Director of Public Safety A. M. Beitler, and Director of Public Works James H. Windrim were among the many city officials present. Mr. George W. Childs, Vice President of the Board of Trustees, assisted by others of the trustees and managers, received the guests from other cities as they entered and escorted them through the building.

The presence of Bishop Potter, of New York, Bishop Whitaker, of Philadelphia, both of whom took part in the impressive exercises; Bishop Foss, Bishop-elect Horstmann, and the venerable Rev. William H. Furness, D. D., bespoke religious sympathy for the institution; while Andrew Carnegie, typifying as well perhaps as any the achievements of the manufacturing world, and Thomas A. Edison, "the Menlo Park wizard," those of the sphere of invention, indicated the interest of these two great branches of human activity, of which the Drexel Institute is to be a part.

Dr. G. C. Gilman, President of Johns Hopkins University; Dr. R. A. Lamberton, President of Lehigh; Seth Low, of Columbia, and Dr. William Pepper, Provost of the University of Pennsylvania, represented the higher education. Chief Justice Daly, of New York, and Chief Justice Paxson, of Pennsylvania, were two of the distinguished members of the legal fraternity present.

Hundreds of other men, equally eminent perhaps in their chosen sphere, were also among the throng of guests.

* * * * *

The auditorium was entirely without floral adornment. Nothing but the classic simplicity of the interior decoration relieved the eye. The occasion needed no setting. The distinguished audience soon filled the seats; chairs were brought in and placed in the aisles, but, notwithstanding this, many were forced to stand in the rear of the hall. Seated on the platform were nearly two hundred men and women—men whose names are recognized as synonymous with achievement, and women

who are noted in educational and charitable circles. Among them were eminent men from other cities; the Governor of Pennsylvania, the Mayor, members of the Board of Education, Select and Common Councilmen, distinguished civilians, and most of the members of the Board of Trustees, Board of Managers, and the Advisory Board of Women of Drexel Institute. Owing to the recent death of Mrs. Drexel, Mr. Anthony J. Drexel, the founder of the institution, was not present.

Among the invited guests was a delegation from Washington, consisting of Vice President Levi P. Morton, Attorney General Miller, General Noble, Secretary of the Interior, Postmaster General Wanamaker, ex-Postmaster General Tyner, Commissioner of Education Wm. T. Harris, and I. Edwards Clarke. From New York, there had come on a special train,

J. Pierpont Morgan, General B. H. Bristow, ex-Secretary of the Treasury; Chauncey M. Depew, the orator of the occasion; H. McK. Twombly, Mr. and Mrs. Abram S. Hewitt, representing Cooper Union; Gen. C. T. Christensen, President of the Brooklyn Trust Company; James J. Goodwin, Chief Justice Daly, Thomas A. Edison, Prof. Nicholas M. Butler, of Columbia College; Seth Low, President of Columbia College; John Sloane, John Bigelow, ex-Minister to France; ex-Postmaster General T. L. James, M. K. Jessup, banker; Samuel D. Babcock, banker, and Richard A. McCurdy, President of the New York Mutual Life Insurance Company, and Andrew Carnegie.

At 3 o'clock the invited guests, after having made a circuit of the interior of the building, appeared upon the stage, led by Dr. James MacAlister, president of the institute, and Bishop Henry C. Potter, of New York, dressed in his ecclesiastical robes.

Among those noted on the platform were: Vice President Morton, Postmaster General Wanamaker, Secretary of the Interior Noble, Attorney General Miller, Andrew Carnegie, of Pittsburg; Bishop Potter, of New York; Charles M. Pratt, of the Pratt Institute of Brooklyn.

Others who were seated on the stage were A. J. Drexel, jr., George W. Childs, G. W. C. Drexel, John R. Drexel, Governor Pattison of Pennsylvania, the Mayor of Philadelphia, James W. Paul, jr., John R. Bell, J. Dundas Lippincott, ex-Secretary Thomas F. Bayard, ex-Senator William J. Sewell, of New Jersey; Frank Thomson, Vice-President of the Pennsylvania Railroad; Thomas A. Edison, E. P. Wilbur, President of the Lehigh Valley Railroad Company; Robert H. Sayre, of Bethlehem, connected with the Lehigh Valley Railroad Company; Wm. T. Harris, LL. D., U. S. Commissioner of Education; President Lamberton, of the Lehigh University; Dr. Henry Coppée, ex-President Lehigh University; Henry Morton, President of the Stevens Institute, Hoboken; Dr. J. E. Rhoades, President of Bryn Mawr College; Miss M. Carey Thomas, Dean of Bryn Mawr College; Enoch Pratt, of Baltimore; B. K. Miller, a prominent attorney of Milwaukee; Beverly Johnson, of Baltimore; Dr. Carey Thomas, President of the John Hopkins Hospital, Baltimore; General William J. Sewell, Vice President of the West Jersey and Camden and Atlantic Railroad Companies; Dr. Edward Brooks, Superintendent of Public Schools; Congressman Henry H. Bingham, A. A. McLeod, President of the Philadelphia and Reading Railroad Company; Chief Justice Edward M. Paxson, of the Supreme Court of Pennsylvania; ex-Postmaster General Tyner, Dr. William Pepper, Provost of the University of Pennsylvania; Captain R. H. Pratt, Superintendent of the Carlisle Indian Training School; Dr. James W. MacKenzie, President of the Schoolmasters' Association, and President De Garmo, of Swarthmore College; General Daniel H. Hastings, Bellefonte; John Russell Young, ex-Minister to China; ex-United States Senator A. C. Cattell, of New Jersey; George B. Roberts, President

of the Pennsylvania Railroad Company; Robert Purvis, Frederick Brown, I. Edwards Clarke, U. S. Bureau of Education.

The following members of the Board of Managers, in addition to Mr. Childs, Mr. Paul and the sons of Mr. Drexel, were also present: Richard C. Dale, Joseph G. Rosengarten, George C. Thomas, J. Lowber Welsh, John R. Fell, Herbert M. Howe, M. D., William V. McKean, the Rev. Dr. Wilbur F. Watkins, Joseph M. Wilson, Addison B. Burk, the Rev. Dr. T. K. Conrad, Joseph Moore, jr., Edward Morrell, George B. Roberts, Walter George Smith, and Edward T. Steel; also the members of the Advisory Board of Women as follows: Miss Anna Hallowell, Mrs. Eliza S. Turner, Mrs. George W. Childs, Mrs. John R. Fell, Mrs. J. Dundas Lipincott, Mrs. James W. Paul, jr., Mrs. John R. Drexel, Mrs. Anthony J. Drexel, jr., Mrs. Joseph P. Mumford, Mrs. Eliza S. Turner, Mrs. J. G. Watmough, Mrs. T. K. Conrad, Mrs. J. Belangee Cox, Mrs. George W. C. Drexel, Miss Mary Dulles, and Mrs. George R. Preston.

THE CEREMONIES.

BISHOP POTTER, OF NEW YORK, OFFERS THE PRAYER OF INVOCATION.

It was a little after 8 o'clock when Dr. James MacAlister stepped to the reading desk, at the front of the platform, and requested the ushers to close the doors. The auditorium was then crowded. In an instant silence fell over the assemblage and the ceremonies began with Dr. Stainer's March in D, rendered on the organ by James M. Dickinson, the well-known organist of St. James's Protestant Episcopal Church. Bishop Potter offered the prayer of invocation, concluding with the Lord's Prayer, in which the vast assemblage reverently followed him.

At the conclusion of the invocation Gounod's triumphant anthem, "Praise Ye the Father," was sung by the choir of St. Stephen's Protestant Episcopal Church, after which Chauncey M. Depew delivered the dedication address. Mr. Depew's manner was grave and his remarks were serious and delivered with much impressiveness of tone and manner. Throughout the forty minutes occupied in their delivery the utmost attention was paid to the speaker.

MR. DEPEW'S ADDRESS.

This is what Mr. Depew said:

Ladies and Gentlemen: "The King is dead, long live the King," has little application to our times. Ancient terms survive but they have lost their meaning. Words which conveyed certain ideas to former generations express different ones for us. The matchlock and the machine gun, gunpowder and dynamite, represent the destructive forces past and present. The university of the schoolmen of the middle age, of Abelard and Duns Scotus, and of the scientific school and technological institute to-day are object lessons as to the significance of education then and now. We talk glibly of progress and the development which is the distinctive glory of our century, but the pace is so rapid and the results so tremendous that it is difficult to grasp either details or conclusions.

The scientist, the sociologist, the political philosopher, and the theologian each claims for his department special recognition for what it has accomplished, and its advance beyond precedents. The educator is compelled to admit their claims, and also to confess that, owing to difficulties which are not of his creation, it has been impossible for him to keep step with his contemporaries.

All the conservatism of centuries has crystallized about the university. Every radical effort to break up old systems and proceed upon new lines has met the combined hostility of faculty and alumni. They point to results, to the long list of men eminent in the professions and in literature, whom the schools claim to be their product and examples.

Far be it from me to detract in any way from the glory of that splendid and self-sacrificing body of educators who have made illustrious the title of teacher. But the teachers have been so compassed and pinioned by legend, tradition, and environment that they have been unable, except within a recent period, to emancipate the curriculum.

THE PROBLEM OF EDUCATION AND LIBERTY.

Steam, electricity and inventions have hardened the conditions of competition and multiplied indefinitely the number of specialties. In the briefest time, and almost without warning, we are brought face to face with the problem that education and prosperity, education and a livelihood, education and morals, education and law, education and liberty are indissolubly wedded together.

In the thirteenth century three volumes easily contained all the learning of that period. Now, from twenty-five to thirty books of the largest size, and edited under the most various and able authorship, do not pretend to embrace in their encyclopædia the knowledge and discovery in the world.

In the Middle Age the people could be broadly divided into two classes, the soldiers and the producers. The labor and skill of the farmer, the merchant, and the artisan were exhausted to support the fighter. Education existed only for ecclesiastics. It was wholly the privilege of the Church. As the nations grew more civilized and their wants increased, the priest became also the lawyer and the doctor. The professions gradually emancipated themselves from the priesthood, but, nevertheless, down almost to our own time, higher education, the course in college or in the university, was reserved for the liberal professions. Even among the most enlightened peoples of Europe, education is still a privilege. In America it is a duty.

The first recognition of the imperative demands of our period was when the optional opportunity broke in upon the time-honored course of classics and mathematics. Then came the scientific school, to be looked upon by the academic department as unworthy of its equal recognition and degree. But the pressing necessities of practical life forced many collegians to go through the scientific school as a postgraduate course and the university to give equal honors to every department of the institution. It is only within our own generation that the perfection of the old education for all the requirements of life has been questioned. The groping after the desired results within the accustomed lines led to the creation of that most abused and misused word "culture."

THE MEANING AND PERVERSION OF "CULTURE."

The Concord School gave it vogue and eminence. With Emerson and his contemporaries it meant a full mind, trained in college, earnestly and industriously grasping all knowledge, impartially sifting testimony and tradition, and with catholic judgment seeking the truth, and with a martyr's courage defending it. Culture became popular. It was the badge of a higher order of selected mortals. It excused the universal range of superficiality. It stood for a little information about everything, and no accurate knowledge about anything. It became the veneer of the quack, and finally the decoration of the dude. But it was not culture, either in its lofty significance or in its degraded use, which the times required. They needed the practical training of youth for the new and sterner realities which science and invention had created. The old education simply trained the mind. The new trains the mind, the muscles, and the senses. The old education gave the intellect a vast mass of information useful in the library and useless in the shop. The superiority of the college graduate over the boy from the common school in the counting-room or the mill was in his disciplined mind and confirmed habits of work. The superiority of the graduate of the technological institute is that he has passed the apprentice period and learned more than the apprentice ever could know.

Our time is full of hope for the optimist, and also of despair for the pessimist. (Applause.)

If the Revolutionary fathers and their cotemporaries could be brought in contact with the realities of to-day, they would feel that the world was upside down. Instead of glorying in the achievements of the present, in the mills, the factories, the furnaces, the superb machinery, the wonderful tools, the complicated mechanism, the hot competitions, and the individual absorbed in the mass which characterize our day, they would wonder how they were to sustain themselves with their equipments and live. Our National pride is promoted by contemplation of the giants of our history in the Senate, in the pulpit, at the bar, and in the professor's chair. It is the happy inspiration of youth that the distinguished characters of the past are presented through the lenses of the years in heroic proportions. It would not only be a sacrilege, it would be a calamity, if modern criticism and research stripped Washington of his majesty, Hamilton of his genius, Jefferson of his democracy, Jonathan Edwards of his intellectual superiority, or Daniel Webster of his peerless pre-eminence, but for all practical uses of the labyrinth and revolution through which we are passing, the worthies of the past are as far from us as King Arthur and his Knights of the Round Table, or William Tell with his arrow and his apple.

THE DANGER ATTENDING NEW CONDITIONS.

One of the most eminent of England's scientists has elaborated the alarming proposition that in the destruction of old methods and the existing requirements of new conditions a period might arrive when that nation would die by starvation. The same articles which constituted its business and income would be manufactured by other countries better and more cheaply, and it would lose its market and revenues. It could not raise its food, and would have no money to purchase from abroad. Longer hours and lower wages might postpone, but could not prevent, the catastrophe. The weeping philosopher says that formerly pestilence and disease kept down population, and thus saved the world from an excess of mouths to feed and bodies to clothe, but now medical skill and sanitary science have prolonged life. Wars, he argues, then served to prevent increase, but now all moral and political influences labor for peace. "I killed only a million of men, mostly Germans," was Napoleon's ghastly protest against the charge of murder, and yet that frightful numeral was only a portion of those who fell victims to his wars.

The tendency of our times is for the people to mass in crowded centres, where the immigrants add continually to the difficulties and necessities of the community. Competition is the law of our age, and the survival of the fittest its fruit. Not only are individuals and corporations subject to its power, but cities, states, and nations. A line in a tariff bill in one country throws out of employment and reduces to pauperism tens of thousands in another. New machinery or greater skill transfers the market for some product from one place to its rival. The rolling-mills of Alabama may put out the fires in Pittsburg. The cotton-mills of Georgia may stop the spindles in Massachusetts. Cheapness and excellence have become the factors of prosperity, for nations, and for towns. Our plain duty is not to waste precious hours in vain regrets for the good old times, or wring our hands in helpless horrors over the difficulties of the present. The pace of progress may have been faster than our preparations, but experience has demonstrated that, when intelligently met, the new is always better than the old. The man who dies for a principle is a hero, but he who starves, rather than abandon the methods of his fathers, is a fool. It is only a generation since a carpenter could also plan and build a house, and a single workman make a wagon, or a knife, or a shoe, or a watch, or any part of either. Machinery has so multiplied and subdivided labor and stimulated production that only a part of any manufactured article comes to the individual, and upon that he must show exceptional skill. The common school has been the foun-

dation upon which we have builded capacity and character, and it has superbly done its work; but now the system requires either to be strengthened, or to be supplemented by institutions like the one whose opening we celebrate. The unsolved problem which gives heartaches to parents, and anxious thoughts to teachers and preachers, is the constantly increasing class of young men and women who have the rudiments of education, but are trained neither for any trade nor any business. They will not join the ranks of unskilled labor, and cannot work beside the mechanic, or artisan, or expert accountant. They fall into minor places already overcrowded, where compensation is small and promotion difficult. They are discouraged as they see those who are better equipped and disciplined rise to competence or independence.

THE NEW SYSTEM OF INDUSTRIAL LIFE.

The strength of our liberty has been that it recognized individuals and not classes. It is still and always must be the pivotal principle of our institutions. It was possible in the earlier period, and in sparser settlements, to carry the same idea into social and business life. But the inventive genius of the century has radically changed our original conditions. It has proved too strong for capital and trade organizations combined. It has placed them in antagonism, and it has united them for mutual protection. Invention is the Frankenstein of our industrial life. It is the soulless creature of human genius, and relentlessly pursues its purposes. It inflicts untold misery upon the few, and confers equal benefits on the many. It has destroyed the apprentice system.

It has substituted employer and employes for master and apprentice. Where individuals found work and instruction, armies are attending upon numberless sections of complicated machinery. The skilled workman who has conscientiously learned his part is suddenly thrown out by a device which renders his tools obsolete. He suffers hardships and privations until he can acquire almost a new trade, or he drops into the crowded ranks of unskilled labor.

Inventive talent can neither be curbed nor banished. The necessities of our commercial success demand its encouragement. The limited express train flies along the rails at sixty miles an hour, but the cool and confident photographer by the roadside utilizes the speed of light, and imprints locomotive and cars as perfectly upon the sensitive film as if they were standing still at the station. So it is our duty to meet the emergency of the hour by calling into play and exercise the latent forces which God has implanted in man to subdue and bend to his will the powers of earth and air. The Atheist says progress is a destructive agent, but governed by natural laws which Deity can neither modify nor repeal. The Christian believes that progress is the development of opportunity for a higher and better life, and the sons and daughters of the world must be ready to throw aside the old and prepare to welcome and work with the new. Civilization destroys the wild game which is the support of the savage, and he must earn his subsistence from the soil or die. The old warrior wraps his mantle about him and sinks stoically into the grave; the young brave hurls himself with vain but dauntless courage upon the Gatling guns or the bayonets of the soldiers and his death song is the requiem of the hope and happiness of the tribe. But for those who adapt themselves to the situation are homes and comforts never known before, and a moral and intellectual life, which lifts them upon higher planes of usefulness and enjoyment. Similar losses and gains mark every milestone in the upward march of man. (Applause.)

WHAT THE COMMON SCHOOLS HAVE DONE.

The common school is aroused by the clang of the combat and seeks to better equip its recruits by evening classes. This method is a help, and a great one, but

it is still the old education of the head, and falls short of the requirements of the hour. The college joins in the good work of university extension and brings the benefits of its curriculum to the doors of those who have neither the time nor the money to enter its portals. But whether its teachings are given in venerable halls or in the lecture room of the village, the benefit of its course of study must be mainly for the minister, the lawyer, the doctor, the journalist, and the business man. For the vast army which must live by labor, and upon the results of whose labor depends the welfare of the country, no adequate provision has yet been made.

This splendid Institute of Art, Science, and Industry leads the column and points the way. The manual training school solves the problem of labor and industrial development. Here will be given instruction in the principles of science, art, and mechanics, and their application to the mill and the mine, the factory and the furnace, the shop and the engine. Here the student after he has mastered the principles can learn the details of his specialty, and grasp the intricacies of machinery. In the art department his eyes will be educated and his hands trained by drawing and perspective, by studies in light and shade, by painting in oil and water-color, by theoretical and applied design, decoration and ornament, and by architectural and mechanical drawing. But physical methods will be supplemented by thorough instruction in the theory and history of art. In the scientific department the secrets of the laboratory will be revealed, chemistry and applied physics will solve the mysteries of nature, and the wonderful works and properties of electricity will become known. As the boy advances from the elementary course he will receive instruction and become familiar with the workshop and its machinery and tools. He will grow skillful in the handling, manipulation, moulding and carving of wood and iron. Work on the bench, with the lathe, the drill, the plane and the screw, and the making of tools, will be common and easy, and the student will practically run the boiler and engine.

The graduates of this school will not be confined within the narrow limits of the apprentice, nor bound by the limitations of the specialist. Upon the broad foundations of their training can be securely built superior capacity for the paths in the industrial world which they elect to follow. They will hail the inventor as their friend, and follow with keen delight his discoveries and improvements. He may render obsolete and useless the tools to which they are accustomed, or the work which they produce, but their thorough grounding in principles will enable them instantly to understand his device, and adapt themselves to the fresh roads they must tread, or retire to the rear. Disciplined intelligence, and harmoniously cultivated minds and muscles, will give the economy in the use of materials, and the skill in the handling of tools, which will command the markets at home and abroad, against the output of mills and factories, where their brethren vainly strive, under old conditions and training, to keep pace with progress and earn living wages in the fierce strife and heat of modern competition.

THE IDEA OF MANUAL TRAINING.

It is a remarkable illustration of the failure of the schools to divine and meet the changes of the century that the first suggestion of a manual training school came from Victor Della-Vos, director of the Imperial Technical School of Moscow, in 1868. The Centennial Exhibition in the City of Philadelphia, in 1876, gave to educators in America and Europe an idea of its scope and necessity. The old education had accomplished splendid results during the first 100 years of our independence. We entered upon our second century by an immediate experiment with the new. After twenty-five years of trial this superb foundation is an enduring monument to its success. (Long continued applause.)

OPPORTUNITIES OPENED TO WOMEN IN THIS NEW ERA OF EDUCATION.

One of the chief glories of the new education is the advantages it gives to women. It recognizes and enforces their equal rights to every intellectual and industrial opportunity which school or college can give to men. It has created for them the Harvard Annex and Barnard, Wells and Vassar, Wellesley and Smith. It has opened the doors of this institution that they may enjoy all its privileges.

It was the disgrace and finally the ruin of Greek civilization that wives were uneducated. Virtue and ignorance, vice and culture, were companions among the women of Athens. America has always been distinguished for the consideration and justice accorded to the gentler sex. And yet it is only within the last half of the present century that a university course upon the same plane as the highest of our college curriculums has been attainable for girls. By following our example and success, ancient Cambridge in England has startled the conservatism of the ages.

The proud ladies who danced the minuet at the inauguration ball of George Washington as first President, never dreamed that modern development might compel their great-granddaughters to enter the lists of labor to earn a living. Our boasted progress has known neither age nor sex. Tender youth and delicate womanhood have been compelled to meet its requirements. It threw upon woman burdens for which she was unprepared. There were only few things for which she was trained, though she was fitted for many. The overcrowding of a limited market destroyed independence, and has compelled women to accept any pittance which avarice might grant. The tragedies of the needle have filled the ocean with tears and the land with sorrows. But from their splendid colleges our girls have graduated equipped for the better places and pay of the important chairs in the schools of the country, both great and small, and for literature, journalism and art. From the technological and manual-training schools they invade the fields of electrical appliances and mechanical drawing, of photography and phonography, of architecture and decoration. It is still the reproach of our times that women receive less pay than men for the same work, equally well done. But chivalry is an emotion, not a habit, and sentiment is left at the shop door in the business world. It is through the power they acquire here, and in institutions like this, that women will be able to fight for and win their rights.

THE PROPER USE OF WEALTH.

This institution is an object lesson in the proper use of accumulated wealth. The essayist and the orator make it the burning reproach of our period that we sacrifice everything to money getting and that riches are our god. But the mad desire for accumulation existed before Croesus, and the passion for hoarding antedates the tragedy of Ananias and Sapphira. Quickly made fortunes are the inevitable incidents of rapid development. The greater the magnitude of the enterprise, the more gigantic are the gains of the far-sighted and audacious. The wider the scope of the invention and its general use, the more millions flow into the pockets of the inventor. Nearly all our rich men have begun with nothing and made their own fortunes. No sane man desires to destroy the opportunities to get on which are so phenomenally frequent in this country, because in a narrower sense he expects either himself, or through his children, to enjoy their benefits, and with broader views he rejoices in the marvelous results in the founding of cities and settlement of States, and in the increase of National power and prosperity which have followed individual enterprise and energy. Under the old civilization no one questioned the rich man's peaceful possession of his property but the king and the brigand. Under the new civilization, legislation tends toward the appropriation or the direction of

the disposition of estates. The worst enemy or the best friend of wealth is its possessor. He can so selfishly administer it as to rouse the hostility of the public and recruit the ranks of Socialism, or he can so wisely and generously bestow his surplus that the community will approve his work and protect vested interests and rights. (Applause.)

THE TRUE FAME THAT RICH MEN HAVE GAINED.

No one remembers or cares how Peter Cooper made his money, but neither this generation nor succeeding ones will forget to be grateful to his memory for the wise provisions and endowments he made for the education of the people. Commodore Vanderbilt's control of and connection with railways will in time become a tradition which few can recall, but his name will live forever through the university he founded and which bears his name. Asa Packer's mining and transportation companies are already administered by others than his kin, and his work in their creation and development has passed out of mind and mention, but the college he established and enriched will ever keep fresh and conspicuous his character and deeds.

The Drexel Institute is not a charity. It neither offends the proud nor encourages the pauper. The dangerous crank is the child and victim of competition. This school will give him a full mind and healthy body. It will so equip him and open avenues for his energies that instead of dynamiting the successful he will be himself a success. It is a practical and beneficent illustration of the Divine injunction, "Thou shalt love thy neighbor as thyself," which extends the helping hand and tenders warm and sympathetic encouragement to the brother who wants to help himself. It is a noble recognition of the needs of the youth of both sexes by placing before them the weapons and the armor for the battle of life, and training them in their uses. It will nurture and instruct a better and broader womanhood, a braver and more intelligent manhood, and a more patriotic citizenship, and, as the years increase and graduates multiply, the Republic will be enriched in its material prosperity, and receive new vigor and earnestness in its moral and intellectual life. (Applause long and loud.)

ADDRESS BY THE HON. WAYNE MACVEAGH IN BEHALF OF MR. DREXEL.

At the conclusion of Mr. Depew's address, the choir rendered Mozart's anthem from the Twelfth Mass, "Glorious is Thy Name," and then the Hon. Wayne MacVeagh, LL. D., made the presentation of the deeds of trust in behalf of Mr. Drexel. He said:

Ladies and Gentlemen: The service of music and prayer and praise to which we have been permitted to listen has been accepted, I am sure, by all of us alike as a privilege and an inspiration. It was very fortunate that Bishop Potter was able to return to the city where his youth was passed, where his father's memory is still cherished as one of our most precious possessions, and where he himself is as beloved and honored as in his own diocese, to give to the ceremony of to-day the sanction of the Church. It was equally fortunate that our most eloquent orator should increase the importance of this important occasion, and add to the distinction of this distinguished assemblage, not only by his presence, but also by expressing, in his own incomparable gift of golden speech, the true nobility of the great gifts we are met to consummate, and the far-reaching consequences the future holds in store for them.

The duty confided to me, although very important, may happily be discharged very briefly, but that it is not to be discharged by Mr. Drexel in person is profoundly to be regretted. From the inception of this noble enterprise, he doubtless allowed himself to look forward to the day when it would be his pleasure to deliver to the gentlemen appointed to receive them the deeds transferring his generous benefac-

tions to the Institute which was to bear his name, and he well knew that his delight in doing so would be far more than doubled by having at his side her whose care and sympathy and love had been the solace and reward of all his labors; but that Providence whose ways are indeed "past finding out," "but whose wisdom it behooves us not at all to dispute," has seen fit, just as he was making these great gifts to others, to withdraw his own best gift from him, and leave him desolate indeed. It is only because of his unavoidable absence that I am representing him.

THE BUILDING.

The first conveyance I am asked to deliver is of the beautiful building in which we are assembled, together with its contents and its appointments, and to be completed so far as they are incomplete, in the same wise spirit of generosity as marks that which has already been done. I undervalue this gift in estimating it to represent an expenditure of \$500,000.

Those of you who have enjoyed the opportunity of examining the building can not fail to have been impressed not only by its beauty, but also by the wonderful utilization of its beauty, and therein is struck the keynote of the good work the Drexel Institute is expected to accomplish. Even the noble and stately hall through which we have passed is only a fitting vestibule to the different workshops which surround it—to the workshops filled with forges, as well as to the workshop filled with books. Throughout the entire structure, the idea of completeness prevails,—Mr. Drexel's resolve having plainly been that the cost was a secondary consideration, and that whatever was a useful means to the ends he contemplated was to be supplied; and it has been supplied even in minutest detail, extending to the physical comfort as well as to the mental and manual training of the young men and young women who are to pass through these halls to a wider and a more useful, as well as to a wiser and more cultivated manhood and womanhood.

Having provided such a beautiful home for the students who are to gather here, and having filled it with every device calculated to make their labors both agreeable and fruitful, Mr. Drexel next addressed himself to the duty of providing for the support of the Institute while engaged in its many and diversified fields of instruction.

THE ENDOWMENT.

He fully appreciated that the breadth of view, and the comprehensiveness of design, illustrated in the eleven departments into which the present work of the Institute has been divided, required the most liberal endowment, and, acting in the same enlightened spirit which actuated him in the erection and appointments of the building, he enables me to transfer to the Institute securities of the most desirable and conservative character, exceeding at their present market value the sum of \$1,000,000, and producing a revenue of very nearly \$50,000 a year.

I find it extremely difficult to speak in terms of becoming moderation of such generosity. These are, indeed, princely gifts, worthy of the giver and of the noble-hearted wife who encouraged him to make them, and of the high and sacred causes of art and science and industry to which they are dedicated. And these great benefactions possess one characteristic which ought not to pass unnoticed. The money thus freely given is singularly free from liability to even unjust criticism of the manner in which it was acquired. The founder of this Institute never sought or received any special favor, by legislation or otherwise, of any kind. No single dollar of the million and a half dollars Mr. Drexel gives away to-day represents any methods of acquiring wealth except open and straightforward methods.

Judge Allison, in replying recently to the congratulations of the Bar upon having completed forty years of most useful and honorable judicial service, took occasion to warn us that while in that period "crimes of violence had greatly diminished,

crimes of a different character had greatly increased in the land, and that breaches of public and private trusts have grown with rapid strides."

It is our happy fortune to feel perfectly sure that no portion of the property to-day transferred represents even a bounty voted or a franchise conferred at the supposed expense of the public, much less any trusts betrayed, public or private. It has never been suggested that the founder of the Drexel Institute practised any arts but manly arts, or that his great fortune was the result of anything but the advantages his comparatively modest inheritance gave him, and his own industry, integrity, and capacity in making use of them. In the days which are before us the question is sure to be asked, and asked often unfairly but with increasing bitterness, of the possessors of great fortunes, not so much what use they propose to make of them, as how they acquired them; and if it be true, as poets say, and a few people may still believe, that an ounce of gold honestly come by is capable of conferring more true happiness than "the wealth of Ormus and of Ind," which wreckers may glean from the beach to which they have beguiled an argosy, the Institute whose beginning we celebrate to-day ought to prove an unalloyed source of joy to him who confers and to them who receive its advantages, and its troops of graduates ought to be, as pray Heaven they may be, capable of living simple, brave, honest lives, fearing God, none beside.

In such a benefaction, where the money has been acquired as fairly as it has been given generously, no man may covet any nobler memory of himself than that the generations yet unborn are to rise up and call him blessed for the opportunity his bounty affords them, and one sees, as in prophetic vision, troops of young men and maidens for countless years filling these spacious halls, their eager faces all aflame with generous enthusiasms, and their young hearts overflowing with gratitude that they were privileged to drink at the fountains of knowledge flowing here so freely and so abundantly.

THE INSTITUTE'S WIDE SCOPE.

For me the chief attraction of the Drexel Institute is the variety of the fountains at which the coming students may choose to slake their thirst for knowledge. It is difficult, of course, to estimate the advantages to be reaped by many youths of both sexes by a faithful pursuit of the practical training to be offered here. To make of young men competent engineers, electricians and chemists, and excellent and artistic workers in wood and iron, and to make of young women skillful designers, stenographers, photographers, bookkeepers and housekeepers, and especially to qualify some of both sexes to be teachers of others in all decorative and useful arts, is a labor abounding in usefulness and honor, but my confident hope is that there will be results attained here infinitely excelling these in real and abiding value.

If thousands of the young people of Philadelphia are each year brought by day and by night into contact with truth and beauty in such of their myriad forms as will be taught and displayed in the Drexel Institute, this community will grow appreciably, and not slowly, in culture and in the ineffable graces of life which culture brings in her train.

The extensive and wisely selected library and the spacious and attractive reading room will be almost in themselves to many students a liberal education, while daily contact with representations of the sculpture of Greece and of the Renaissance will arouse the dormant instinct for beauty, and give birth to desires for excellence theretofore undreamed of. The museum, already rich in examples of the beautiful creations of many different lands, and sure rapidly to increase its possessions, will be a daily object lesson, kindling in the generous minds of youth the same ennobling aspirations.

To all of these quickening influences music is to add her charms, so as to complete with art and letters the magic circle within which the everlasting fountains of idealism are unsealed, and the true enjoyment of life begins. It must be a very dull youth, indeed, of either sex, who can sit unmoved in such an audience chamber as this while the music of the grand organ falls upon the ear, and the memory is recalling the lifework of the benefactors of the human race kindred to these whose names we see around us: great musicians who have soothed the weary lives of men with their divine melodies; great painters who have transferred to canvas their fadeless dreams of immortal beauty; great sculptors whose forms "mock the eternal dead in marble immortality;" great patriots who would willingly taste death that their country might live; great philosophers who have spent their lives in the ceaseless and the faithful pursuit of truth, and over all, great poets, who sit in inaccessible and throned majesty, the sovereign educators of mankind.

Under the inspiration and with the benediction of such companionship, the pupils of the Drexel Institute may be confidently expected to prove themselves worthy of the efforts of its founder to help them to help themselves to become wiser and better men and women than if its gracious and generous opportunities had not been proffered to them. It only remains for me to deliver these deeds to Doctor MacAlister, the President of the Drexel Institute, who receives them on behalf of the Trustees.

THE DEEDS ACCEPTED.—DR. MACALISTER RECEIVES THEM FOR THE BOARD OF TRUSTEES.

Dr. James MacAlister, President of the Institute, accepted the deeds on behalf of the Board of Trustees. He said:

I have the honor, on behalf of the Board of Managers, to accept the deeds of trust of the land, building and endowment of the Drexel Institute of Art, Science, and Industry. It is not easy to express in adequate terms the responsibility which the acceptance of this trust entails. Were the institution which begins its history to-day one built upon old and established lines it would be comparatively an easy task to characterize the duties which will devolve upon those who are to be charged with its management. But where the work which it is intended to do and the ends it is expected to accomplish are in so many respects new and untried, a certain degree of reserve is becoming in him who undertakes to state the important obligations which will rest upon every one who is to be concerned in carrying the purposes of the founder into execution.

I am sure, however, that I speak truly in saying that the Board of Managers are as profoundly impressed with the difficulties as they are with the magnitude of the trust which Mr. Drexel has confided to them. The official relations which I hold to the Institute lead me to emphasize this statement while pledging their single-minded devotion to the interests that have been committed to their care.

THE INSTITUTE'S SCOPE AND PURPOSE.

The scope and purpose of the Drexel Institute are well expressed in the descriptive words of its title. It is to be a School of Art, Science, and Industry. But it is not so much the love of the beautiful, the knowledge of nature, the power to work, considered as separate elements of human culture, as the close relations and interdependence of these, that will form the subjects of the instruction and training. And it is in this direction that the problems that it will have to solve will be found.

The specific object of the Institute is to open new and higher occupations, involving knowledge and skill to young men and women. This it proposes to do by furnishing opportunities for education in the principles and practice that underlie such of the industrial arts as will be included in its curriculum. The productive value and rank of

any kind of labor depends upon the amount of mind that is put into it. The craftsman differs from the common laborer in just this respect. It is the divorce between design and execution that has led to the deterioration that has been going on in nearly all the industrial arts for the past 300 years. In the great days when the common articles of life were made that are now treasured for their beauty in our museums the artificer and designer were one; they made with their own hands what their imagination had created. And with this work went a joy which has passed out of the life of the worker. It is to bring back into the school the careful training that was formerly given by the master workman to his apprentices in the shop that the Drexel Institute has come into existence. By joining instruction in science and art to earnest and sincere labor, it will aspire to train craftsmen and craftswomen in pursuits that are now relegated to the level of unskilled labor; and in so doing it will strive to make life richer and happier, while elevating the laborer and enhancing the value of his handiwork. The Drexel Institute is a product of the new education; of that larger view of the school which is due to Pestalozzi, the humble Swiss schoolmaster, whose name might well have been inscribed with those of the great benefactors of mankind which adorn the walls of this hall. The time has come when the domain of education must be enlarged; when, to the fair humanities which have filled so large and important a place in the schools of the past, must be added the practical necessities of life that the evolution of society has brought into relief. The two questions of the day that are more vital to the existence and well-being of every civilized nation than all others are the organization of labor and the universal education of the people. And what it behooves economists and statesmen to take notice of is that these two problems are inseparably connected.

All the legislation which the wisdom of statesmen or the ardor of reformers may devise will not end the conflict between labor and capital, or bring to a close the disturbances that now threaten the very existence of society. The elevation of labor is no longer a thing to be debated; the point it has already gained is only the vantage ground for the expanse that lies beyond. The need of a deeper, wider sympathy for the laborer on the part of those who stand outside his sphere is conceded on all sides. But the reconciliation will only be found in education. Indeed, education, properly conceived, is the essential condition of all human progress. When those who are charged with the administration of scholastic affairs have risen to Emerson's idea of education, as being as broad as man, and that its "great object should be commensurate with life," we shall find provision made for something more than the mere sharpening of the intellectual faculties. The development of the bodily powers, the cultivation of right standards of living, and practical training in those industrial pursuits that come within the range of the school, will all find place in that complete and harmonious unfolding and discipline of the powers and faculties of man's being which has been the ideal of every great educator in the history of the world.

AS TO THE FUTURE.

It is not my purpose at this time to go into an exposition of the plans which have been adopted for carrying on the work of the Institute. I shall have the honor at an early day to speak at length on this subject. Meanwhile, the *Preliminary Circular of Information* may be taken as including the ground which the Institute is intended to cover. I may also add that at this stage in the life of the Institute the practical development of its work is quite as important as the discussion of principles. It should be remembered that an institution like this is not made in a day or a year. We shall move slowly at first; we shall have to solve some difficult problems; we shall need to think deeply and work cautiously, but there is a bright and ever-opening future ahead. Bearing the great purpose of the Founder in mind and counting upon the confidence and encouragement of the public, we shall push forward the development of the several departments as rapidly as circumstances may

permit ; and we have faith that in time the Drexel Institute will realize all that the splendid foundation which it has received gives cause to expect.

It may be permitted me to say that the scheme upon which the Institute has been projected is neither narrow nor illiberal. It has certain specific objects which are a departure from the courses found in existing colleges and schools. But surely there is nothing in these which call for defence. It will seek to elevate, beautify, and ennoble the home by its courses in the domestic arts ; it will offer a curriculum in the mechanic arts, which will be adapted to bring its graduates into sympathy with the industrial spirit which is not the least important characteristic of modern civilization ; it will open up new technical courses that will give to some important occupations a higher position in the economic scale, and produce a larger reward to those who adopt them as a means of livelihood. Surely these are objects not unworthy of the greatest university in the land ! Whatever tends to increase and improve the means of self-support for men and women leads directly to strengthen their self-dependence and self-respect, and these are virtues that lie at the roots of a nation's strength and greatness.

But outside of these special aims, the Institute is intended to offer to the masses of the people opportunities of culture and enlightenment in the broadest sense. The Library, Museum, and Lectures will seek to carry all that art and literature and science can do to make life nobler and better. The immortal beauty which Athens and Florence have bequeathed to the world will be made to sweeten the daily toil of the bread winner ; and while the Institute may rightly be characterized as secular in its foundation and aims, it will not, I am sure, forget the place which those ethical and religious principles that are universal and eternal should hold in every scheme of education.

I cannot bring these remarks to a close without a reference to the hereavement which has caused the absence of him to whom all these attractive surroundings and all this fair promise is due. The companion who shared with the founder the fond anticipations which are in part realized to-day is not here to cheer us with her gentle presence. But we have the precious memory of all that she hoped for the Institute. For the Board of Trustees, and, may I be permitted to add, for myself, that memory will be the greatest incentive to make the Institute worthy of the pure and unselfish purpose which gave it birth.

THE CEREMONIES CONCLUDED.

The ceremonies concluded with the benediction pronounced by Bishop Whitaker, who said : "The peace of God, which passeth all understanding, keep your hearts and minds in the knowledge and love of God and of His Son Jesus Christ our Lord ; and the blessing of God Almighty, the Father, the Son and the Holy Ghost be amongst you and remain with you always. Amen."

The audience dispersed with the organ pealing Beethoven's majestic "Hallelujah," from "Mount of Olives," taking the opportunity, however, of making a more thorough inspection of the Institute building.

TELEGRAMS AND LETTERS.

Numerous telegrams and letters were received from distinguished men who were unable to be present, among them one from the Hon. George William Curtis, and another from Secretary of State James G. Blaine. These read :

FROM THE HON. GEORGE WILLIAM CURTIS.

MY DEAR SIR :—I regret exceedingly my inability to accept the invitation to be present at the services of dedication of the Drexel Institute on Thursday afternoon. The occasion will be peculiarly significant for us. Only is the Institute another

monument of the characteristically wise munificence of American benefactors, but it is an illustration of the ever wider range of American education. It marks the participation of manual industry, following literature and art and science, in the traditional dignity of university training. It proposes to give skilled workmen, in the best sense of the word, to a country in which political power is largely held by them, and, recognizing that woman is a helpmate and coworker of man, it includes women both in its instruction and in its management.

It is an enterprise of the noblest promise, which begins under the happiest auspices, and upon which the city of Franklin and Rittenhouse is most heartily to be congratulated. Very truly yours,

GEORGE WILLIAM CURTIS.

FROM JAMES G. BLAINE.

I have delayed my answer to your very kind invitation in the hope that I might go, but public business detains me here. Congratulate Mr. Drexel upon the wise object of the institution which his magnificent liberality has established.

THE DEEDS CREATING THE INSTITUTE AND DIRECTING THE ORGANIZATION OF THE GOVERNING BODIES.

The fact that the erection of the building was begun by Mr. Drexel in 1890, has already been stated. In the following year the Deed of Trust, naming the Trustees of the new Institute and making over to them, for the purposes therein expressed, the building with all its appurtenances and contents, and the grounds adjoining, was executed by Anthony J. Drexel and his wife.

This deed, recorded on the 19th of October, bears the date of October 17th 1891, and names as the recipients of the trust the five persons, residents of Philadelphia, and citizens of Pennsylvania, who are to be known as the Trustees. It was this instrument, with, also, another creating the income bearing endowment of the Institute, which, on the occasion of the opening ceremonies, was formally delivered to the Trustees by Mr. McVeagh acting for Mr. Drexel.

After reciting the fact of the erection of the building and its purpose, and acknowledging the consideration received and fully describing the property to be conveyed, the Deed empowers the Trustees—

To have and to hold said buildings, lands, tenements and hereditaments, with the appurtenances, unto the said Anthony J. Drexel, George W. Childs, Richard C. Dale, Anthony J. Drexel Jr., and James W. Paul Jr., their heirs, successors and assigns, in trust, for the uses and purposes and with the powers and upon the terms and conditions hereinafter expressed as follows:

First. That the parties of the second part and their successors in the trust, shall hold and use the premises hereby conveyed as and for an Industrial School, to be known as the Drexel Institute of Art, Science and Industry, which shall afford to persons of both sexes on equal terms, opportunities for education and improvement in Art, Science and Industry.

Second. That the parties of the second part and their successors in the trust, shall have the power and authority, and it shall be their duty, from time to time to establish rules and regulations for the administration of said Drexel Institute, through a Board of Managers, who shall be entrusted with the conduct and supervision of the affairs of the Institute, and with promoting their practical working.

Third. That the number of Trustees shall at all times be kept up to the number of five, and if any one or more of them should die, resign, or for any cause neglect or refuse to act, then the surviving or acting Trustees for the time being, shall have the power and authority from time to time, as often as may be necessary, by an instrument of writing under their hands and seals duly executed and acknowledged and recorded in the office for recording deeds in Philadelphia County, to fill such vacancy or vacancies, and thereupon the person or persons thus nominated and appointed shall become invested with all the rights, title, power, authority and duties of the person whose place he or they were appointed to take, and the Trustees as thus reconstituted, from time to time, shall have and possess all the rights, title, power and authority of the parties of the second part named herein.

Fourth. In case the said Trustees or their successors shall hereafter procure the organization of a corporation for the purpose of carrying on the work of the Drexel Institute of Art, Science and Industry, it shall be lawful for said Trustees or their successors to make conveyance of the premises hereinbefore described to such corporation, to hold in trust for the uses and purposes herein declared.

Fifth. If at any time in the future, it shall appear to the Trustees named in this deed, or to their successors in the trust, that the State of Pennsylvania, or the City of Philadelphia shall have established an institution or institutions or schools, for purposes similar to that contemplated for the Drexel Institute of Art, Science and Industry, which shall afford to the public full opportunity for education and improvement, then it shall be lawful for said Trustees or their successors to present to the Court of Common Pleas of Philadelphia County, a petition, reciting the facts and the approval of said Court having been obtained to use the building for any other charitable purpose, or to sell the premises hereby conveyed in trust, and to appropriate the proceeds of sale to the establishment or support of such charity or charities as at that time may appear most to conduce to the public welfare or the cause of humanity.

In witness whereof, the parties of the first and second part respectively have hereunto fixed their hands and seals the day and year first above written.

(Signed)	ANTHONY J. DREXEL.	[L. s.]
(Signed)	ELLEN ROZET DREXEL.	[L. s.]
(Signed)	ANTHONY J. DREXEL.	[L. s.]
(Signed)	GEORGE W. CHILDS.	[L. s.]
(Signed)	RICHARD C. DALE.	[L. s.]
(Signed)	A. J. DREXEL, JR.	[L. s.]
(Signed)	JAMES W. PAUL, JR.	[L. s.]

Sealed and delivered in the presence of

(Signed) J. I. BURTIS.
(Signed) FRANCIS SOMMER.

The organization of the corporation and government of the Institute is embodied in four groups of authorities: namely "The Board of Trustees," "The Board of Managers," "The Advisory Board of Women," and the "Instructors and Officers" who form the Faculty. The Rules and Regulations which define the limits of the authority of the several bodies and designate their duties, methods, times of meeting, etc., with the list of the several members of the various Boards and Committees, fill some 14 of the 23 pages of the official pamphlet issued January 1892.

These were adopted by the Trustees November 24th 1891. Such portions of these as seem necessary to show the organization of the

Institute are given here from this official statement. The Board of Trustees consists of five members appointed by Mr. Drexel.

Article I. of the rules relating to the Board of Trustees provides for their stated monthly, and the annual, meetings; the first on the second Tuesday of each month and the last "on the day of the regular monthly meeting in October." The President, or any two Trustees, may call special meetings and a majority of the Trustees form a quorum.

Article II. Declares that "the officers of the Trustees shall be a President, Vice President, a Treasurer, and a Secretary. The President and Vice President to be elected annually at the stated meeting in October.

"The Treasurer shall be appointed by the Trustees and shall hold office at their pleasure." Minute directions follow as to his having custody of all books of accounts, deeds, bonds, etc., as to his opening a bank account; as to keeping full records and accounts; and as to his making all disbursements under orders of the Board of Managers.

The Secretary shall be appointed by the Board of Trustees and hold office at their pleasure, shall perform all the duties of a Secretary and such other duties as the Trustees may prescribe.

Article III. creates a Board of Managers to consist of twenty-two persons "who shall be entrusted with the conduct and supervision of the affairs of the Institute." They are to be divided into three classes and the first members are to be appointed for one, two, and three years respectively. Hereafter all appointments are to be for terms of three years. The members of the present Board, as given at the close of this account, are named in this article. As the terms expire, new members are to be appointed by the Trustees; who may hereafter increase or diminish the number of managers as, in their judgment, the interests of the Institute may require.

SEC. 5. The Board of Managers shall have power to elect a President of the Institute, and upon his nomination, shall appoint the professors, assistant professors, lecturers, instructors and other employes of the Institute. The Board shall direct the expenditure of the income of the Institute, and shall have power to adopt such by-laws for their own government, and such rules and regulations for the conduct and supervision of the affairs of the Institute and the promotion of its practical working as may be consistent with the Deed of Trust hereinbefore referred to and the rules and regulations of the Trustees.

Article IV. relates to the President of the Institute and his duties, and is here given in full.

ARTICLE IV.—THE PRESIDENT OF THE INSTITUTE.

SECTION 1. The President of the Institute shall have the general charge and supervision of all the educational departments of the Institute and of the instruction given in the same. He shall be responsible for the educational management of the Institute, and for the performance of their duties by the professors, assistant professors, lecturers, instructors and other officers of the Institute. He shall have the direction and management of all the professors, lecturers, instructors and other

teachers in the several departments, and shall advise and counsel with them as to the course of instruction and studies to be pursued.

SEC. 2. He shall prepare the courses of instruction and arrange for the lectures to be given in the several departments of the Institute, subject to the approval of the Board of Managers.

SEC. 3. He shall keep himself informed upon the progress made in other schools of Art, Science and Industry, and he shall make an annual report to the Board of Managers, containing such recommendations respecting the Institute as he shall deem important for promoting its best interests and largest usefulness. He shall also submit monthly reports to the Board of Managers, setting forth facts, information and recommendations respecting the affairs and operations of the preceding month.

SEC. 4. He shall conduct the correspondence of the Institute, be the organ of communication between the teaching body of the Institute or any member thereof, and the Board of Managers, also between the Board of Managers and the public, and with institutions of similar character at home and abroad, and shall maintain official relations with other educational institutions and associations devoted to the promotion of the objects to which the Institute is dedicated.

SEC. 5. He shall be ex-officio a member of the Board of Managers, but without a vote, and shall attend all meetings of the Board of Managers and of the Advisory Board of Women, and when his duties will permit, all meetings of the committees of said Boards.

SEC. 6. He shall preside at all commencements and public meetings of the Institute, and shall present the diplomas and certificates presented by the Board of Managers, but in his absence diplomas shall be presented by such other professor or officer as may be designated by the Board of Managers.

Article V. relates to the Advisory Board of Women.

ARTICLE V.—ADVISORY BOARD OF WOMEN.

SEC. 1. There shall be an Advisory Board of Women consisting of fifteen members, who shall be nominated by the President and Vice-President of the Board of Managers and the President of the Institute and chosen by the Board of Managers at their annual meeting.

They are classed in three classes as are the Board of Managers. Their officers are a Chairman, and a Secretary, to be elected annually. This Board meets on last Tuesday of each month and a majority of the full membership is a quorum.

The duties of this Board are thus defined in section 3 of this article.

SEC. 3. It shall be the duty of the Advisory Board to visit the various departments and classes of the Institute as often as convenient, to counsel with the President of the Institute as to the condition of the buildings, the organization of the departments and the instruction given in the same, and to make such recommendations to the Board of Managers respecting the Institute as they shall deem proper.

A majority of the whole number of members shall constitute a quorum for the transaction of business.

ARTICLE VI.—INSTRUCTORS AND OFFICERS.

SECTION 1. The teaching body of the Institute shall consist of a President, Professors, Assistant Professors, Lecturers and Instructors, all of whom shall hold their offices during the pleasure of the Board of Managers.

SEC. 2. All other officers and employes shall be appointed and retained in the service of the Institute on the like condition.

ARTICLE VII.

The Trustees shall have power at any time or times to alter, amend or repeal any of the Rules and Regulations, or to adopt new or additional Rules and Regulations by the vote of four of the Trustees given at any stated meeting of the Trustees, provided that notice of the proposed change be given and entered on the minutes of the Trustees at one previous meeting at least, and such new or additional or altered Rules and Regulations shall have all the force and effect as though adopted hereby and embodied herein; the power to increase or diminish the number of the Board of Managers and to alter, amend or repeal the Rules and Regulations, and to adopt new and additional Rules and Regulations at any time or times, after such specified notice, being hereby expressly reserved to the Trustees to be exercised by them in pursuance of the provisions of the said deed.

Of the rules and regulations, etc., relating to the Board of Managers, Article I. recites those in reference to their number and powers, as already here given in Article III. of those relating to the Trustees.

ARTICLE II.—MEETINGS OF THE BOARD.

SECTION 1. The regular stated meeting of the Board shall be held on the second Tuesday of each month, except when it shall be a legal holiday, in which case the meeting shall be on the next succeeding Tuesday, and the annual meeting of the Board shall be held on the same day with the annual meeting of the Trustees. The annual meeting and the stated monthly meetings shall convene at three o'clock in the afternoon, or at such hour as the Board shall from time to time direct.

SEC. 2. Special meetings of the Board may be called at any time at the request of the President or by any five members of the Board of Managers, or by any of the Committees.

SEC. 3. A majority of the Board shall constitute a quorum for the transaction of business.

SEC. 4. All reports to the Board shall be in writing and shall be signed by the Committee reporting.

SEC. 5. The order of business at the meetings of the Board shall be as follows:

1. Calling the roll of members.
2. The reading of the minutes.
3. Communications from the Board of Trustees.
4. Reports and communications from the President of the Institute.
5. Reports of Standing Committees.
6. Reports of Special Committees.
7. Communications from the Advisory Board of Women.
8. Unfinished business.
9. New business.

Article III. states the officers of the Board of Managers and defines their duties. A President, Vice President, and Secretary, are to be chosen by the Board at the annual meeting and the usual duties of such officers are prescribed.

The Committees and their provinces are prescribed as follows in

ARTICLE IV.—COMMITTEES OF THE BOARD.

SECTION 1. The Standing Committees of the Board shall be as follows:
Committee on Finance.

Committee on Buildings and Property.

Committee on Instruction.
Committee on Library and Reading Room.
Committee on Publications.
Committee on Museum and Art Collections.
Committee on Public Lectures and Entertainments.
Committee on Law and on By-Laws and Rules.
Each Committee shall consist of five members.

The Committee on Finance.

SEC. 2. It shall be the duty of the Committee on Finance to exercise a careful oversight over the books, accounts, receipts and expenditures of the Institute.

Committee on Buildings and Property.

SEC. 3. The Committee on Buildings and Property shall have the care of the real estate and buildings belonging to the Institute, and they shall report what extensions, improvements, alterations or repairs of buildings may from time to time be needed.

Committee on Instruction.

SEC. 4. The Committee on Instruction shall, in connection with the President of the Institute, have the general care of the instruction given in the several departments, and shall recommend from time to time such changes in the studies and training given in the Institute as they may deem expedient or desirable.

Committee on Library and Reading Room.

SEC. 5. The Committee on Library and Reading Room shall, in connection with the President of the Institute, have the general care and oversight of this department, and shall report to the Board from time to time upon its condition and needs.

They shall have charge of the expenditures of such sums as may be appropriated by the Board for the purchase of books and periodicals.

Committee on Publications.

SEC. 6. It shall be the duty of the Committee on Publications, in connection with the President of the Institute, to arrange for the publication of papers on various subjects connected with the work and objects of the Institute, and to attend to the printing of the same.

Committee on Museum and Art Collections.

SEC. 7. The Committee on Museum and Art Collections shall, in connection with the President of the Institute, have charge of the Museum and of the organization and installation of the collections belonging to the Institute, and they shall report to the Board from time to time upon the condition and needs of the Museum.

Committee on Public Lectures and Entertainments.

SEC. 8. It shall be the duty of the Committee on Public Lectures and Entertainments, in connection with the President of the Institute, to determine what public courses of lectures and entertainments shall be given from time to time in the Institute, and to make the necessary arrangements for the same, subject to the approval of the Board.

Committee on Law and on By-Laws and Rules.

SECTION. 9. The Committee on Law and on By-Laws and Rules shall have charge of all matters involving the legal relations or obligations of the Institute.

Limitation of Committees' Powers.

SEC. 10. No Officer or Committee shall incur any obligation for the payment of money without authority from the Board of Managers, or unless an appropriation has been made therefor; and the bills shall be audited in conformity with Article V.

The three closing articles refer to payment of all bills and accounts by the Treasurer as already provided for by the Trustees; to nominations made by the President of the Institute; and to changes of By-Laws.

The following official statement of the Institute describing concisely the building and the Educational Departments it is proposed to establish, was issued a few weeks before the formal opening and dedication of the Building.

It is here given in full as showing the golden promise of the Future.

PRELIMINARY CIRCULAR OF INFORMATION.

The Drexel Institute has been founded by Anthony J. Drexel, of Philadelphia, for the promotion of education in Art, Science, and Industry. The chief object of the Institute is the extension and improvement of industrial education as a means of opening better and wider avenues of employment to young men and women. It is the founder's desire, however, that the plan of organization should be comprehensive, providing liberal means of culture for the masses by means of lectures, evening classes, library, and museum. The general design upon which the Institute will begin its work is outlined below, but it is probable that modifications may hereafter be made as the growth of the several departments and the experience gained in conducting them may require.

THE SITE.

The Institute is situated on Chestnut street, corner of Thirty-second street. This location was chosen as being the most central and most convenient of access from all parts of the city. It is at a point near where a number of the principal highways converge; within easy reach of three or four main lines of street railways; but four squares from Powelton Avenue station; three squares from South Street station; and three squares from the Baltimore and Ohio station.

The vacant land on Chestnut and Thirty-second streets west of the Institute will be laid out for the present as a garden and recreation ground for the students.

THE BUILDING,

The building is in the style of the classic renaissance. It is constructed of light buff brick with terra-cotta ornamentation of a darker color; the base is of rock-faced granite. The principal entrance is on Chestnut street, by a richly decorated portal, 26 feet wide and 35 feet high, which admits to a portico enriched with colored marbles and paneled oak ceiling, and this in turn opens into a spacious entrance-hall, the ceiling of which is supported by pillars of red Georgian marble. Beyond the entrance-hall is the great central court, 65 feet square, the entire height of the building and covered with a decorated ceiling, the center of which is filled with stained glass. At the farther end of the court is the double marble stairway, ascending to the upper stories and descending to the auditorium and to the workshops in the basement. Arcades support and enclose the broad galleries which run around the court on the second and third floors. From these galleries open the

class-rooms, laboratories, and studios, all of which are lighted from the exterior of the building. There is thus a free circulation of light and air throughout the entire building. The portico, entrance-hall, and central court are wainscoted in marble; the arcades are faced with enameled bricks, and the dividing cornices are of terra-cotta; the wood-work throughout the building is of polished oak.

On the first floor, opening from the entrance-hall, are the offices, the library and reading-room, and the museum. The library and reading-room is a fine apartment, 120 feet long by 60 feet wide. The museum is about 70 feet square. The lecture-hall and auditorium are entered from the central court. The lecture-hall, which has chairs for two hundred and fifty students, is equipped with every appliance necessary for scientific experiments. The auditorium, which has a separate entrance from Thirty-second street, is a spacious and finely-appointed hall, capable of seating fifteen hundred persons. It is furnished with upholstered arm-chairs. At the west entrance are lavatories for ladies and gentlemen. The decorations of the stage, which is at the east end of the auditorium, are in the Italian renaissance style and harmonize with the front of the grand organ which occupies the center.

On the second, third, and fourth floors and in the basement are the class-rooms, studios, and workshops, numbering thirty-two in all. The class-rooms are all of unusual size, averaging from 48 by 34 feet to 56 by 44 feet. The physical laboratories, three in number, are situated on the second floor. The chemical laboratory is on the third floor. The shops for mechanical work are in the basement. The gymnasium, occupying the fourth story of the front of the building, is entered by hallways on the third floor, with which are also connected the dressing-rooms and bath-rooms. The photographic studios and laboratory are on the upper floor at the rear. The cloak-rooms and lavatories, finished in marble and oak, are placed in all four stories of the building. The trustees' room is on the second floor.

In the basement are the steam, mechanical, and electric plants. The boilers, engines and dynamos are all of the most approved design and construction, and are so arranged that they can be used to excellent advantage in connection with the instruction in the mechanical and technical departments. Great attention has been paid to the heating and ventilation of the building, and it is lighted throughout by electricity. For the latter purpose, about two thousand incandescent lamps will be required. The entire building has been fitted with the new Johnson self-regulating heating apparatus, which will secure an equable temperature at all times throughout the central court, corridors, halls, class-rooms, studios, laboratories, and workshops.

DEPARTMENTS OF THE INSTITUTE.

The work of the Institute will be arranged under the following general divisions:—

- I. THE ART DEPARTMENT.
- II. THE SCIENTIFIC DEPARTMENT.
- III. THE DEPARTMENT OF MECHANIC ARTS.
- IV. THE DEPARTMENT OF DOMESTIC ECONOMY.
- V. THE TECHNICAL DEPARTMENT.
- VI. THE BUSINESS DEPARTMENT.
- VII. THE DEPARTMENT OF PHYSICAL TRAINING.
- VIII. THE NORMAL DEPARTMENT FOR THE TRAINING OF TEACHERS.
- IX. THE DEPARTMENT OF LECTURES AND EVENING CLASSES.
- X. THE LIBRARY AND READING-ROOM.
- XI. THE MUSEUM.

Independent of the regular departments, students will have the option of taking such courses as they may elect and can advantageously pursue.

Other departments will be added as the need or demand for them becomes apparent. A Department of Choral Music will probably be instituted at an early day.

ART DEPARTMENT.

1. Free-hand and model drawing ; perspective.
2. Study of the antique in outline and light and shade.
3. Painting in oil and water-color.
4. Theoretical and applied design, decoration, historical ornament.
5. Decorative sculpture—elementary course in clay modeling ; advanced course in ornament and design.
6. A course in architectural drawing.
7. A course in mechanical drawing.
8. A normal course for the training of teachers and supervisors of art in public and private schools. This will be a systematic course occupying three years.
9. Lectures on the history of art.

Special classes will also be provided for instruction in form study and drawing and the study of color, for public school teachers.

SCIENTIFIC DEPARTMENT.

In beginning the work of this department, provision will be made for the following courses :—

Chemistry.—General chemistry—lectures and laboratory ; analytical chemistry—qualitative and quantitative, lectures and laboratory ; industrial chemistry—lectures and laboratory.

The chemical laboratory has accommodations for one hundred and sixty students. It is fitted up with every appliance and is unsurpassed in all its appointments.

Physics.—General physics—lectures ; special courses with laboratory work ; applied physics with special attention to electricity—lectures and laboratory.

There is a large physical laboratory with two smaller rooms opening from it. These will be equipped with a collection of modern apparatus in all the departments of physics.

In the basement a room will be fitted up as an electrical laboratory, and will be furnished with every appliance necessary for practical training in the applications of this important branch of physical science.

DEPARTMENT OF MECHANIC ARTS.

The Department of Mechanic Arts is intended to furnish a three years' course of education for boys who have finished the elementary school. It will aim to fit young men for a business or industrial career, and to bring them into sympathy with the industrial tendencies of the times. A thorough course of manual training will be provided, and this will be supplemented by carefully devised courses of instruction in drawing, mathematics, science, and such other branches as are needed for a comprehensive but practical secondary education. The student will have systematic training in the workshops and laboratories, and will have an opportunity of acquiring a practical knowledge of steam and electrical machinery and appliances in connection with the extensive mechanical plants in the building.

The course of instruction and training will embrace mathematics ; physics ; chemistry ; mechanics ; free-hand ; mechanical and architectural drawing ; wood-work ; iron-work ; fundamental principles of machine construction ; the steam engine ; elementary economics ; physical training in the gymnasium.

DEPARTMENT OF DOMESTIC ECONOMY.

This department will offer a liberal course of instruction and training for girls and young women in everything pertaining to the organization and management of the household. It will be thoroughly practical, while aiming to broaden the culture of

young women in directions that have been heretofore neglected in their general education.

The course will extend over two years, and will embrace cookery; millinery and dressmaking; the building, sanitation, decoration and management of the house; household economy; human physiology and hygiene; business forms and accounts; free-hand drawing; elementary economics; physical training.

THE TECHNICAL DEPARTMENT.

The Technical Department will embrace the special courses which are intended to prepare young men and women for practical pursuits. These courses are directed to occupations which have more or less connection with art, science, and business. The instruction will therefore be comprehensive and thorough, with a view to sending out graduates who will value the education obtained as the basis of success and whose aim will be to improve and elevate the vocation they have assumed.

Provision will also be made in this department for courses having special relation to the household, and which might be advantageously taken by young women desirous of acquiring proficiency in the more important domestic arts.

The length of time required for the technical courses will vary; but most of them may, with proper application, be finished in two terms.

The following courses will be offered as soon as the organization and equipment can be completed:—

Course in Applied Electricity.—The principles of electrical science—lectures and laboratory; the construction of dynamos; management of batteries; technical applications of electricity to the telegraph, the telephone, lighting, and as a motive power; free-hand and mechanical drawing; mathematics; practical training in connection with the extensive electrical plant and appliances in the building.

Course in Machine Construction.—Principles of mechanics; bench-work, lathe-work, drilling, milling, planing; work with screw machine; tool-making; steam engine—history, theory, and practical management; designing and construction of machines; practical training in boiler and engine rooms of the Institute; mathematics; mechanical drawing; lectures on chemistry and physics.

Course in Mechanical Drawing.—The use of instruments; lettering; shading and coloring; geometric problems; plane and isometric projections; machine drawing from sketches; shadows and perspective.

Course in Photography.—Chemistry of photography—lectures and laboratory; the construction and use of instruments; studio practice—posing and grouping; retouching of negatives; laboratory work; the reproductive processes dependent on photography—lectures and laboratory.

Ample opportunity for practical training will be furnished in the two large studios and the laboratory, with their artistic and scientific equipments.

Course in House Decoration.—Principles of design; historical ornament; painting in water-color; painting in distemper; decorative painting; stained-glass work; designing of interiors.

Course in Wood-Carving.—Nature and use of tools; elementary exercises; ornament of various kinds; original designs for panels; carved enrichments for furniture, frames, architectural decoration, etc.

Course in Cookery.—The making and care of the fire; boiling, stewing, broiling, frying, and roasting; bread-making, pastry, fancy cookery; invalid cookery; care of the kitchen; the chemistry of foods—lectures and laboratory; laying, decoration, and serving of the table.

Two large and finely-equipped school-kitchens are set apart for the instruction and training in cookery. There is also a well-appointed dining-room for practical training in the decoration and serving of the table.

The collection of food products and preparations will form an important auxiliary of the instruction.

Course in Millinery.—Plain sewing; designing and making of the various kinds of bonnets and hats; the kinds and qualities of materials used in millinery; illustrated lectures on the history of costume; instruction in drawing and the principles of color harmony as aids to design; business forms and accounts.

Constant use will be made of the works on costume in the Library and the collection of textiles in the Museum.

Course in Dressmaking.—Plain sewing; cutting and fitting; designing of dresses; the kinds and qualities of materials used in dressmaking; hygiene of dress; illustrated lectures on the history of costume; business forms and accounts.

Instruction will be given in drawing and the principles of color harmony as aids to design.

The Library is well supplied with works on costume, and there is an extensive and valuable collection of textiles in the Museum, both of which will prove useful auxiliaries to the instruction.

BUSINESS DEPARTMENT.

This department will provide thorough training in stenography, type-writing, book-keeping, business forms and accounts, and correspondence. The course will also include practical training in the writing of English and familiar lectures on the terms and operations of manufactures, commerce, finance, and law.

The aim of the course is to prepare young men and women for the higher forms of employment as clerks, book-keepers and secretaries. It may be completed in two terms, but the progress made will depend very largely on the previous general education of the student.

No student will be admitted to this department who has not had at least a good English education. Young men and women who have had the advantage of a secondary education will find this department an excellent means of preparing themselves for what can be made with thorough training one of the most desirable occupations now open to them.

DEPARTMENT OF PHYSICAL TRAINING.

The Department of Physical Training will afford superior opportunities for the physical culture of girls and young women. Special courses of training will be arranged, morning, afternoon, and evening, for children and adults.

The department will be under the care of a thoroughly educated and trained director.

Stated hours will also be set apart for boys and young men, and a competent instructor will have charge of these classes.

The Gymnasium will be fitted with the best and most improved appliances. In connection with the Gymnasium there are two suites of finely-appointed marble baths, the use of which will be carefully regulated by the director.

Lectures on Physical Culture and on Personal and Public Hygiene will be given in connection with this department.

THE NORMAL DEPARTMENT FOR THE TRAINING OF TEACHERS.

The modifications which the elementary and secondary schools are gradually undergoing in the direction of art, industrial, and physical education, as well as the establishment of schools in which these forms of training occupy a prominent place, are creating a necessity for instructors specially prepared for these kinds of work, which has thus far not been recognized by normal schools and colleges.

The Normal Department will undertake to supply this need and will provide

courses of instruction and training that will be thoroughly practical as well as liberal in their scope and character. With the varied resources at its command, the Institute will be able to offer unusual advantages to men and women desirous of fitting themselves for successful work in this new and inviting field of labor.

The Normal Department will embrace the following courses :

1. A course for teachers and supervisors of Elementary Art Instruction.
2. A course for teachers of Manual Training.
3. A course for teachers of Domestic Economy.
4. A course for teachers of Physical Culture.
5. A special course for teachers of Cookery.
6. A special course for teachers of Sewing, Millinery, and Dressmaking.

An important feature of the Normal Department will be the classes in Art, Science, and various forms of Industrial Training, for teachers of public and private schools. The object of these classes will be to furnish opportunities for improvement to teachers actively engaged in work and to enlarge their knowledge and training in such directions as will prove advantageous to them, personally and professionally.

The President of the Institute will lecture, in connection with the normal courses, on the History and Institutes of Education.

LECTURES.

Evening lectures on subjects of general interest, in addition to those devoted to science and art and their industrial applications, will be provided during the winter months, to which the public will be admitted.

Organ recitals will be given in the afternoon and evening, at frequent intervals, for the purpose of promoting a wider interest in the higher order of music.

EVENING CLASSES.

The sessions of the evening classes will begin in October and continue till the end of March.

Instruction will be given in the following branches :

Free-hand, mechanical, and architectural drawing, designing, modeling in clay, wood-carving.

Mathematics, physics, chemistry, applied electricity, wood-working, iron-working, forging—general and artistic.

Cookery, millinery, dressmaking.

Stenography and type-writing, book-keeping, business forms, accounts and commercial transactions, correspondence.

The Gymnasium will be open on stated evenings for physical training. Separate classes will be formed for young men and young women.

The Library and Reading-Room will be open every evening while the evening classes are in session, and opportunity will be afforded for pursuing courses of reading parallel with the various departments of instruction and the lectures.

The Museum will be open on stated evenings for the use of the students attending the evening classes, and for the accommodation of those who may be unable to visit it during the day.

LIBRARY AND READING-ROOM.

The Library and Reading-room, which occupies a fine apartment, 120 feet by 60 feet, will constitute an important feature of the Institute. The needs of the several departments will be the primary consideration in the formation of the library, and the special collections in art, science, and technology will therefore be made as representative of the best literature in these subjects as possible. In addition to

these, however, the library will embrace a large selection of finely illustrated works and books in general literature.

The Reading-Room will be supplied with the best periodicals in every department of human knowledge and culture.

One of the prominent features of the Library will be the Reference Department, in which the cyclopædias, dictionaries and reference books of every kind will be grouped, and to which free access will be allowed.

Another feature of the Library Department will be the Reading Circles for pursuing select courses of reading. Each circle will have its conductor, who will prepare the syllabus, direct the course of reading, and meet the members at stated times for the discussion of the topics involved. Facilities for reading and study will be provided in the library.

While the library is intended for the students attending the Institute, the public will be admitted to certain privileges in connection with it, under such restrictions as may hereafter be established.

Free use of the reading-room and of the library for consultation will be accorded to the public.

The needs of artists, architects, designers, and mechanics will be specially recognized in the library, and every facility will be extended to them in affording access to the books.

A School for the Training of Librarians will be organized at an early day in connection with the library.

THE MUSEUM.

The collections of the museum will be chiefly technical in character, and besides examples of the best art-industrial work will embrace the materials and processes involved in their production. The growth of the museum must, of course, be a matter of time, but a good beginning has already been made. Mr. Drexel has presented the museum with many fine examples of work in metal, ceramics, wood, embroideries, and textiles, recently purchased in Europe. These will be of great value in connection with the work to be done in the art and technical departments of the Institute. Mr. Drexel's liberality has been supplemented by gifts from George W. Childs, the family of the late Lieut. Allan G. Paul, U. S. N., and Dr. Edward H. Williams.

The art department has been supplied with a collection of plaster casts representative of the sculpture of the classic and renaissance periods.

ADMISSION.

Students will not be admitted to any of the regular courses of the Institute who have not had a good elementary English education, equivalent to what is implied in the usual grammar school course of instruction. For some of the courses, more advanced standing will be required.

Examinations will be required for admission to all the systematic courses, unless a satisfactory certificate of proficiency can be furnished, but this requirement will not apply to some of the special and technical courses or to the evening classes. In every case, however, only such persons will be admitted as are fitted to profit by the course they desire to pursue.

Promptness and regularity of attendance will be required of all students.

FEEES.

It is the desire of the founder of the Institute that its advantages should be brought within the reach of the largest possible number ; but in order to guard against the

abuse of the privileges which it will afford, fees will be required in the several departments and courses. The liberal endowment of the Institute, however, will make the charges extremely moderate, and these will be regulated solely with a view to securing the ends for which the Institute has been established. All moneys received as fees will be used in maintaining and extending the work of the Institute.

The fees must be paid in advance, and no part of the fee will be refunded to students who withdraw before the close of the course or class in which they have been registered.

Students will be required to provide the text-books needed for their own use and all the materials used in the art classes.

A small deposit will be required of students attending the laboratory courses in chemistry and physics to cover the breakage.

In the millinery and dressmaking classes, students will be required to provide a portion of the materials used in the work.

All the tools and materials used in the workshops will be furnished by the Institute.

SCHOLARSHIPS.

A system of free scholarships will be established for the regular and special courses. The following distribution of scholarships has been adopted for the present, but changes may hereafter be made :

I. To the public schools of the City of Philadelphia.

The graduates of the Grammar Schools for boys and girls, 60 scholarships.

The graduates of the Central High School, 15 scholarships.

The graduates of the Manual Training Schools, 15 scholarships.

The graduates of the Girls' Normal School, 25 scholarships.

II. To children of residents of Philadelphia who have not been educated in the public schools, 20 scholarships.

III. To residents of the State of Pennsylvania, exclusive of Philadelphia, 15 scholarships.

IV. To residents of States other than Pennsylvania, 10 scholarships.

Only a portion of the whole number of scholarships will be granted at the opening of the Institute, in order that a proportionate number may be reserved for succeeding years.

The scholarships will be granted to such students as furnish the best evidence of the disposition and ability to make a proper use of them, and who stand most in need of the aid which they will afford.

Definite information as to the terms and conditions on which the scholarships are to be awarded will be made known hereafter.

THE OPENING.

All the departments and courses will not be set in operation at the opening of the Institute. The demand for instruction and the possibility of forming classes will determine the order and the time of starting them.

The registration of students will begin on Monday, January 4th, 1892, and the work of instruction as soon thereafter as the several classes can be formed.

Further information as to any of the departments or courses may be obtained at the office of the President, or of the Secretary and Registrar, at the Institute.

All communications should be addressed to *James Mac Alister, LL.D.*, President Drexel Institute.

November 15th, 1891.

The following announcements of the opening of several departments have since been made :

DREXEL INSTITUTE OF ART, SCIENCE, AND INDUSTRY.

JAMES MACALISTER, LL.D., *President.*

ART DEPARTMENT. 1892-3.

First term begins September 12th, 1892.

Second term begins February 1st, 1893.

The Art Department provides thorough instruction in Free-hand Drawing ; Drawing from the Antique and from Life ; Painting in Oil and Water-Color ; Mechanical Drawing ; Architectural Drawing ; Clay Modeling ; and the Applications of Art in Design, Wood-Carving, and Stained Glass.

Among the instructors are Clifford P. Grayson (Oil Painting), Will S. Robinson (Water-Color), James Wood (Drawing from the Antique), Charles Grafty (Clay Modeling), Edith A. Palmer (Drawing).

Mrs. Hannah J. Carter, the Director of the Department, who has had large experience in elementary art instruction, gives special attention to the Normal work and takes personal charge of the classes in Methods of Teaching.

The instructors in Mechanical and Architectural Drawing and in Applied Art (Design, Wood-Carving, Stained Glass, etc.), yet to be appointed, will be thoroughly skilled and experienced in their respective branches.

The Department is so organized as to provide opportunities for thorough and systematic instruction in any branch of art. It will be seen from the courses outlined below that they have been arranged to meet the requirements of different classes of students. In the systematic courses a certain amount of work is required of all students ; but outside of that the progress made depends wholly upon the ability and application which each student brings to his work.

The courses of study provide for two lines of work : Regular Classes, five days per week ; and Evening Classes, from the middle of October to the end of March, three times per week, from 7.30 to 9.30.

The accommodations for the Art Department are ample, the various rooms and studios being fitted with every requirement and convenience for the different kinds of work pursued.

The Department is supplied with a collection of plaster casts, representative of the sculpture of the classic and renaissance periods, and with valuable collections of drawings, designs, prints, and photographs. The collection of textiles, wood-carvings, metal-work, and ceramics, in the Museum of the Institute, are of great value in connection with the instruction in the Art Department. The Institute Library contains an extensive collection of art and illustrated books, to which the students have free access.

Courses of lectures are given on the Principles and History of Art and on Historical Ornament. Students may attend the courses on the Chemistry of Color and the Chemistry of Textiles and Dyeing, in the Science Department, for a small additional fee.

The Department furnishes drawing and modeling boards, easels, wood-carving tools, and modeling clay. The materials used in the various kinds of work must be supplied by the student.

All work done by the students is subject to the control of the Department until the close of the term or school year.

The following courses are now open to students:—

I. REGULAR ART COURSE.

First Year.

1. Groups of geometric solids in outline and light and shade.
2. Ornament from the cast in crayon and charcoal.
3. Still life groups in light and shade.
4. Foliage from nature in pencil and in India ink.
5. Cast drawing—head and details of human figure in light and shade.
6. Free-hand perspective and sketching.
7. Historic ornament.
8. Principles of design and decoration.
9. Clay modeling from ornament and from the antique.

Second Year.

1. Drawing from the antique in light and shade.
2. Drawing from anatomical casts.
3. Drawing and sketching from the figure.
4. Painting in oil or water-color—still life.
5. Pen and ink drawings from objects.
6. Clay modeling from the round and from life.

Third Year.

1. Drawing from the antique.
2. Drawing from life—head ; figure.
3. Painting in oil and water-color—still life and sketching from nature.
4. Painting in oil—head.
5. Pen and ink drawing from the figure.
6. Clay modeling (optional).

Fourth Year.

1. Water-color—still life and figure from life.
2. Oil painting—still life ; head ; figure.
3. Sketching and composition.
4. Clay modeling (optional).

II. NORMAL ART COURSE.

The Normal Art Course provides instruction and training for students desiring to qualify themselves as teachers and supervisors of drawing in public and private schools.

First Year.

The course of study covers nearly the same ground as the work of the regular art course, with the addition of geometrical drawing and instruction in methods of teaching form study, drawing, and color, in the school-room.

Second Year.

1. Drawing from the antique.
2. Decorative design—historic ornament and plant forms.
3. Outlines of mechanical and architectural drawing.
4. Elements of perspective.
5. Water-color—still life.
6. Clay modeling from the antique—life.

7. Methods of teaching.
8. Wood-carving (optional).
9. Lectures on the History of Art.

Students who have taken the two years' certificate may pursue graduate courses for the purpose of qualifying themselves for teaching in more advanced lines of work.

III. MECHANICAL AND ARCHITECTURAL DRAWING.

The special courses in Mechanical and Architectural Drawing are thorough, the object being to fit the student for practical work in the drafting-room and the architect's office, respectively.

Mechanical Drawing.—The use of instruments; geometrical drawing; lettering, shading, and coloring; orthographic and isometric projections; shadows and perspective; detailed and finished drawings of machinery from specific data; sketching.

Architectural Drawing.—Free-hand drawing; drawing from the antique; the architectural styles; decorative details; plans and elevations of buildings; pen-drawing; shading and water-color work.

IV. COURSES IN APPLIED ART.

DESIGN.

The course in Applied Design is for the training of professional designers, and occupies three years.

It provides thorough instruction in the principles of decorative design and in the technical methods of their practical applications. The instruction runs nearly parallel with that given in the first three years of the regular course, with special training in the applications of art to the production of original designs for oil cloth, wall-papers, carpets, wood-work, metal-work, tiles, book-covers, etc.

DECORATIVE PAINTING.

This course follows substantially the same lines of work as are laid down in the first three years of the regular art course, with their special applications to the following branches: Painting in distemper, interior decoration, stained-glass work, etc.

WOOD-CARVING.

This course is intended for students desirous of learning the technical work of Wood-Carving.

The course of instruction comprises the following subjects:—

Nature and use of tools; elementary exercises; ornament of various kinds; original designs for panels; carved enrichments for furniture; frames; architectural decoration.

Preliminary training in drawing and design, equivalent to the first two years of the regular art course, is required of students taking this course.

STAINED-GLASS WORK.

This may be taken as a purely technical course, but it is preferred that students should have had the preliminary art training, or should pursue a course in drawing and design in connection with it.

The course embraces systematic instruction in the various processes employed in the production of stained glass—tracing from cartoons, pattern-cutting, glass-cutting, glazing with lead—and in the execution of designs in the materials now employed in the production of decorative glass work.

V. CLASSES FOR TEACHERS OF PUBLIC AND PRIVATE SCHOOLS.

Special classes are provided for the benefit of teachers who are unable to attend the regular courses. Instruction is given in drawing, modeling in clay, design, and methods of teaching elementary form study, drawing, and color.

Special arrangements will be made to suit the convenience of teachers desirous of attending these classes.

VI. EVENING CLASSES.

Instruction is given in the following branches:—

Free-hand, mechanical, and architectural drawing; drawing from the antique; designing; modeling in clay; wood-carving; stained glass.

The sessions of the evening classes begin the middle of October and close the end of March.

A special circular giving particulars concerning these classes will be issued in September.

FEES.

Regular Art Course.—First two years, twelve dollars per term; third and fourth years, fifteen dollars per term.

Normal Course.—Fifteen dollars per term.

Mechanical or Architectural Drawing.—Ten dollars per term.

Courses in Applied Art.—Design or decorative painting, first two years, twelve dollars per term; third year, fifteen dollars per term. Wood-carving, ten dollars per term. Stained-glass work, ten dollars per term.

Special Students.—Drawing, twelve dollars per term. Drawing and painting in oil or water-color, fifteen dollars per term.

ADMISSION.

For admission to the regular course, students must have had at least a good English education, equivalent to the usual grammar school course of instruction, and it is desirable that they should have some knowledge of free-hand drawing.

Special students having the requisite qualifications are admitted to any of the classes in the Art Department.

Application for admission should be made to the Secretary and Registrar of the Institute, whose office hours are from 9 a. m. to 4 p. m.

May 10th, 1892.

SCIENTIFIC DEPARTMENT.—CHEMISTRY.

ERNEST A. CONGDON, PH. B., *Professor of Chemistry.*

First Term begins September 12th, 1892.

Second term begins February 1st, 1893.

The following Courses in Chemistry will be given during the year 1892-3.

A. REGULAR COURSES.

1. *General Elementary Chemistry.*—First and Second terms. Two lectures per week. Laboratory work—two periods per week of two hours each.

2. *Qualitative Chemical Analysis.*—First term. One lecture per week. Laboratory work—two periods per week of two hours each.

3. *Industrial Chemistry.*—Second term. Two lectures per week.

B. SPECIAL LECTURE COURSES.

1. Chemistry of the Metals—ten lectures.
2. Chemistry of Textiles and Dyeing—twelve lectures.
3. Chemistry of Foods—twelve lectures.
4. Chemistry of Photography—ten lectures.
5. Chemistry of Paints and Painting—ten lectures.
6. Chemistry of Clays—five lectures.

The dates for these courses will be announced hereafter.

The Courses in the Department of Chemistry are designed to give the student a thorough knowledge of the elements and principles of the science. The instruction is given by means of lectures, fully illustrated by experiments and specimens, by occasional conferences, and by laboratory work in which the student is trained to deduce the more important facts of the science, to study the comparative properties of compounds, and particularly to acquire a scientific habit of thought.

The Courses in Qualitative Analysis and Industrial Chemistry are the beginning of more advanced work. The main object of the instruction is to prepare students for actual work as practical chemists and in the arts and manufactures requiring chemical knowledge.

FEES.—The fees for the several courses will be as follows :—

General Elementary Chemistry.—Lectures and laboratory work, twelve dollars per term. For the lectures without the laboratory work, five dollars.

Qualitative Chemical Analysis.—Lectures and laboratory work, ten dollars per term.

Industrial Chemistry, five dollars per term.

For each of the special lecture courses in Chemistry, except that on Clays, two dollars. The course on Clays, one dollar.

A deposit of five dollars, to cover breakage, is required of all students taking the laboratory work.

All fees must be paid in advance.

The lecture room is furnished with every convenience for scientific experiments, and the appointments of the laboratory, which has accommodations for one hundred and seventy students, are unsurpassed.

Application for admission to any of the courses should be made either by letter, or at the office of the Secretary and Registrar, between 9 a. m. and 4 p. m.

The Evening Courses in Chemistry will be announced hereafter.

May 10th, 1892.

LECTURES ON THE CHEMISTRY OF TEXTILES AND DYEING.

An elementary course of eight Lectures on the Chemistry of Textiles and Dyeing will be delivered by Prof. Congdon in the Lecture Room of the Institute, Wednesday mornings at 11 o'clock, commencing Wednesday, March 23rd.

The Lectures will be illustrated by experiments, by drawings, charts, and diagrams, and by the collection of textiles in the Museum of the Institute.

The Lectures will be open to the public. Course tickets only will be sold at 50 cents, which may be obtained at the office of the Secretary and Registrar at the Institute.

SYLLABUS OF THE LECTURES.

INTRODUCTORY.—Historical Sketch of the Art of Dyeing and Textile Printing. Definitions and Explanations of Terms used in Dyeing Processes—Staining, Dyeing, and Printing. The term *Lake* defined and explained. Chemical Terms used—Precipitation, Solution, and Suspension.

I. *Textile Fabrics.*

Vegetable—Cotton, Flax, Hemp, Jute. *Animal*—Wool, Silk. *Mineral*—Asbestos. Structure and Characteristics of Fibres. Use of the microscope in distinguishing fibres and in the examination of fabrics. Action of various chemical reagents on fibres.

II. *Materials Used in Dyeing.*

Water—Hardness, Effect of various impurities, Means of purification, Mechanical and Chemical. *Chemicals*—Soda, Lime, Acids. *Thickeners*—Vegetable: Starch, Dextrine, Gums. *Animal*: Albumen, Casein, Fibrine, Gluten. *Mineral*: Pipe Clay. Mordants and Dyes.

III. *Operations Preliminary to Dyeing.*

Cleaning—Removal of extraneous and foreign matters. *Bleaching*—Removal of chemical impurities and whitening of the fibres.

IV. *Theories of Dyeing.*

The Mechanical Theory. The Chemical Theory. Use and Action of Mordants; their chemical composition.

V. *Natural Coloring Matter.*

Vegetable—Dyes from Roots and Barks: Madder, Logwood, Brazil Wood, Sandal Wood, Fustic, Quercitron, Turmeric, Catechu, Lokao. Lichens: Archil, Litmus. Persian Berries, Weld, Woad, Annatto, Indigo. *Animal*—Cochineal, Kermes, Lac Dye, Tyrian Purple. *Mineral*—Chalk, Gypsum, Heavy Spar, Chrome Yellow, Chrome Green, Arsenical Green, Iron Buff, Manganese Brown, Prussian Blue, Cobalt Blue, Ultramarine, Vermillion.

VI. *Artificial Coloring Matters.*

The Coal Tar Colors—Aniline Dyes, Artificial Alizarine, and others.

The following books, which will be found in the Library of the Institute, are recommended for reference and study by the students and others attending the Lectures.

Works on Art in Textiles.—Dupont-Auberville—Decorative Textiles. W. Griggs Portfolio of Spanish Art. W. Griggs—Portfolio of Italian and Sicilian Art. Fischbach—Textile Fabrics: 3 Vols. Rock—Textile Fabrics: Handbook. Rock—Textile Fabrics.

Works on Color and Design.—Ashenhurst—Design in Textile Fabrics. Beaumont—Color in Woven Design.

Works on the Technical Processes.—Marsden—Cotton spinning. Beaumont—Wool Manufacture. Ure—Philosophy of Manufactures. Benedict & Knecht—Chemistry of the Coal Tar Colors. Crookes—Handbook of Dyeing and Calico Printing. Sadler—Handbook of Industrial Organic Chemistry. Hummel—The Dyeing of Textile Fibres. Love—Art of Dyeing. Bird—The American Practical Dyer. Gardner—Bleaching, Dyeing, and Calico Printing. Report of the U. S. Dept. of Agriculture, for 1890.

Work of General Reference.—Spon's Encyclopedia of Industrial Arts and Manufactures. Wagner's Chemical Technology. "Textiles" and other special articles in the Encyclopedia Britannica.,

SCIENTIFIC DEPARTMENT—PHYSICS.

WILLIAM J. HOPKINS, S. B., *Professor of Physics.*

First Term begins September 12th, 1892.

Second Term begins February 1st, 1893.

The following courses in Physics will be given during the year 1892-3:—

1. *Preparatory course (one term).*—Elementary Laboratory Physics—training in laboratory methods.

Two lectures per week; laboratory work, two periods per week, one and a half hours each.

2. *Course in General Physics* (two terms).—Mechanics of Solids; Hydrostatics and Hydrodynamics; Mechanics of Gases; Sound; Heat; Light; Electricity.

Two lectures per week; laboratory work, two periods per week, two hours each.

Students taking this course should have a knowledge of Elementary Algebra and Plane Geometry.

3. *Technical Course in Applied Electricity.*—In this course, which occupies two terms, the elements of Electricity and Magnetism are first taken up and thoroughly treated. The student is then familiarized by lectures and by practical work in the laboratories with the applications of electricity to telegraphy and telephony; the methods and apparatus used; the properties of overhead and underground lines; the management of primary and secondary batteries; principles of dynamo-electric machinery; the use of the dynamo for lighting and for the transmission of power; use of the motor in stationary power plants and on railways; wiring and line construction.

For admission to this course the student must have a good knowledge of Elementary Algebra and Plane Geometry and of General Physics; and unless he has had the necessary preliminary training in Mechanical Drawing, Shop-work, Mechanics of Machinery, Strength of Materials, and the Elements of Steam Engineering, he will be required to take the parallel courses in these branches provided in the Institute.

The Lecture Room is furnished with every convenience for scientific experiments. The Laboratories are supplied with large collections of modern apparatus by the best makers, and are fully equipped with all the appointments needed for experimental work.

FEES.

Preparatory Course.—Eight dollars per term.

General Physics.—Ten dollars per term.

Technical Course in Applied Electricity.—Fifteen dollars per term

A deposit of five dollars, to cover breakage in the laboratories, is required of all students. This is returned at the close of the term, less the cost of the apparatus destroyed.

All fees must be paid in advance.

The Evening Courses in General and Applied Physics will be announced in September.

Application for admission to any of the courses should be made either by letter, or in person, at the office of the Secretary and Registrar of the Institute, between 9 a. m. and 4 p. m.

May 10th, 1892.

DEPARTMENT OF MECHANIC ARTS. 1892-3.

First Term begins September 12th, 1892.

Second Term begins February 1st, 1893.

The Department of Mechanic Arts provides a thorough course of instruction and training in Mathematics, Science, Drawing, and Shop-work in connection with the essential English branches of a secondary education.

While the education given is intended to prepare for business or industrial pursuits, it seeks to develop and cultivate those qualities of mind and character that are of most value in the conduct of life. The object at every stage is to give the student the power to think and act for himself—the practical ability that is the best result of school training.

The whole course of instruction is so broad and yet so practical that the graduate cannot fail to find some occupation for which his taste and aptitude fit him; and at the same time he will be prepared for such an advanced scientific or technical course as he may desire to pursue.

The course of instruction which extends through three years is as follows.

FIRST YEAR.

Mathematics.—Review of Arithmetic; Algebra; Plane Geometry.

Science.—The Geographical Distribution and Economic Use of Minerals and Plants; Chemistry; Physics—preparatory laboratory work and lectures.

Language.—English Language.

Drawing.—Free-hand and Mechanical Drawing; Clay Modeling.

Shop-Work.—Carpentry; Joinery; Wood-Turning; Bench Work (chipping and filing) in Iron; Care and Use of Tools.

SECOND YEAR.

Mathematics.—Solid Geometry; Plane Trigonometry; Business Forms and Accounts.

Science.—Physics; Physiology and Hygiene.

Language.—English Language and Literature; Civil Government.

Drawing.—Mechanical Drawing; Historic Ornament; Clay Modeling.

Shop-Work.—Pattern-Making; Molding; Casting; Forging; Welding; Tempering; Soldering; Brazing.

THIRD YEAR.

Mathematics.—Spherical Trigonometry; Surveying; Theoretical Mechanics.

Science.—Electrical Physics and Applications of Electricity; Theory and Practice of the Steam Engine.

Language.—English Language and Literature; Practical Economics.

Drawing.—Mechanical Drawing; Architectural Drawing; Principles of Design.

Shop-Work.—Constructive Woodwork; Ornamental Ironwork; Applied Mechanics; Machine Work; Practical training in connection with the extensive Mechanical and Electrical Plants in the Institute.

The time of the student is about equally divided between the class-room and laboratory studies and the shop-work.

The English Instruction which is carried through the entire course, is thorough and comprehensive and furnishes a basis of sound liberal culture for all the other studies. Carefully devised courses of reading are prescribed for each term's work in English. Type-writing is taught during the third year.

The scientific instruction is given chiefly by lectures and laboratory work, the text-book being used only for reference and review. ③

The scientific laboratories and the work-shops are large, well lighted, well-ventilated rooms, and are unsurpassed in the perfection and completeness of their appointments.

The instruction in Drawing extends through the three years of the course. The Drawing and Modeling Rooms are supplied with an extensive collection of plaster casts, photographs, drawings, prints, etc.

Constant use is made of the Library and the Museum of the Institute in connection with the work of the Department. The students have also the use of the Reading-Room which is well supplied with the best home and foreign periodicals in art, science, technology, and literature.

FEES.

Twenty dollars per term.

A deposit of five dollars is required of all students while in the classes in Chemistry and Physics, to cover breakage in the laboratories. This is returned at the close of the term, less the cost of the apparatus destroyed.

All fees must be paid in advance.

ADMISSION.

Students must have had at least a good elementary education, equivalent to that generally included in grammar school courses of instruction. An examination in the more important branches is required.

Application for admission should be made by letter, or in person, at the office of the Secretary and Registrar of the Institute, between 9 a. m. and 4 p. m.

May 10th, 1892.

TECHNICAL DEPARTMENT.—COOKERY COURSES.

HELEN M. SPRING, *Chief Instructor.*

First Term begins September 12th, 1892.

Second Term begins February 1st, 1893.

The following Courses in Cookery will be given during the year 1892-3:

First Course.—The fundamental principles of Cookery and practice in the preparation of simple dishes and courses. Cost of materials for, and preparation of, a simple dinner.

In connection with the practical training in the making of dishes, elementary instruction is given in the composition and dietetic value of foods and in the setting and service of the table.

Second Course.—This course includes instruction and practice of an advanced character in the preparation of more complicated dishes and menus than are included in the First Course.

Course in Invalid Cookery.—This course is intended for the training of professional nurses and persons desirous of acquiring a practical knowledge of cookery suitable for the sick-room. It embraces general principles, followed by special instruction and training in invalid cookery.

Normal Course for Training Teachers of Cookery.—The object of this course is to train special teachers of cookery, for whose services there is a constantly increasing demand. The instruction is thorough and occupies one year. It embraces the following subjects:

All the preceding Courses in Cookery.

Chemistry and its Applications to Cookery and other Departments of Domestic Science.

Human Physiology and Hygiene.

Domestic and Public Sanitation.

Lectures on the general principles of Methods of Teaching and on the History of Education in its relations to this department of school work.

Practical Training in the instruction of Elementary Classes.

Saturday Morning Course for Girls.—This course is intended for young girls who are in school the other days of the week. The instruction is specially adapted to their needs.

There are two finely appointed school-kitchens and a well-furnished model dining-room.

Chemistry Lectures.—A course of lectures on the Chemistry of Foods is provided in connection with the First Course in Cookery. Students desiring a more extensive knowledge of Chemistry should take the course of lectures in General Elementary Chemistry with the laboratory work. All Cookery students are advised to take the former of these courses.

Fees.—The fees for the several courses, per term, including all materials, are as follows :

First Course, ten dollars ; Second Course, fifteen dollars ; Invalid Cookery, ten dollars ; Normal Course, thirty dollars.

A deduction is made when students take the Chemistry lectures and laboratory work in connection with the Cookery Courses.

All fees must be paid in advance.

The term in each case is five months.

One lesson of three hours is given per week.

Applications for admission should be made by letter, or in person, at the office of the Secretary and Registrar of the Institute, between 9 a. m. and 4 p. m.

May 10th, 1892.

TECHNICAL DEPARTMENT.—MILLINERY.

CAROLINE L. T. BURGESS, *Chief Instructor.*

First Term begins September 12th, 1892.

Second Term begins February 1st, 1893.

The following Courses in Millinery will be given during the year 1892-3:

First Course.—The fundamental principles relating to the making of hats, bonnets, and toques. These are executed in colored cotton flannel, sateen, and cheese-cloth, which represent, respectively, velvet, ribbon or silk, and cr pe. The instruction and practice leads at the end of the term to the making of hats, bonnets, and toques of choice materials.

Second Course.—The study of black silk and crape work, frame-making, and practical work in choice materials.

Each course occupies one term of five months.

Two lessons per week are given, of two hours each.

During both terms, instruction is given in free-hand drawing and color harmony, as aids to design, and in different kinds and qualities of textiles in their relation to artistic millinery.

During the first term lessons are given in business forms and accounts, and during the second term, lectures on the Chemistry of Textiles and Dyeing.

Constant use will be made of the works on Costume in the Library and the collection of textiles in the Museum of the Institute.

All materials used in the making of hats, etc., are selected and furnished by the students.

Certificates will be granted only to students who have satisfactorily finished both courses and performed the prescribed work.

For admission to either of these courses, students must be at least eighteen years of age.

The fee for each course is twelve dollars.

Application for admission should be made by letter, or in person, at the office of the Secretary and Registrar of the Institute, between 9 a. m. and 4 p. m.

May 10th, 1892.

TECHNICAL DEPARTMENT.—DRESSMAKING.

Mrs. CARRIE M. HALL, *Chief Instructor.*

First Term begins September 12th, 1892.

Second Term begins February 1st, 1893.

The following Courses in Dressmaking will be given during the year 1892-3 :

First Course.—This course is devoted to the fundamental principles of dressmaking ; the choice of different materials ; drafting the skirt from measurements ; cutting, making, hanging, and draping the skirt ; cutting and fitting the waist from patterns ; the general finish of garments.

Second Course.—Drafting the waist from measurements ; matching striped, plaid, and figured materials ; advanced work in making princess dresses. A considerable portion of the time is devoted to practical work leading to a knowledge of the designing of dresses.

Third Course.—This course is intended for students who have satisfactorily completed the first and second courses, and consists of drafting and finishing outside garments of different materials and the making of children's garments. Each student is required to design and make a street dress, a dress in gown form, and a coat. In this course, orders for work may be taken by students from persons supplying the materials required, the fitting to be done in the work-room of the Institute ; a practical application for business purposes will thus be made of the knowledge gained.

Each course occupies one term of five months.

Two lessons per week are given, of two hours each.

During all three terms, instruction is given in the kinds and qualities of materials used in dressmaking.

Instruction is given during the first term in business forms and accounts. During the second term lectures are given on the Chemistry of Textiles and Dyeing, and during the third term on the History of Costume.

The Library of the Institute is well supplied with works on costume and there is a valuable collection of textiles in the Museum, both of which are used as auxiliaries in the instruction.

All materials except those supplied in the third course by persons ordering work must be furnished by the students.

Certificates will be granted only to students who have satisfactorily finished the three courses.

Applicants must be at least eighteen years of age and have a fair knowledge of hand and machine sewing.

Fees.—First Course, fifteen dollars ; Second Course, twenty dollars, including the drafting chart ; Third Course, twenty-five dollars.

Applications for admission should be made by letter, or in person, at the office of the Secretary and Registrar of the Institute, between 9 a. m. and 4 p. m.

May 10th, 1892.

BUSINESS DEPARTMENT.

First Term begins September 12th, 1892.

Second Term begins February 1st, 1893.

There are two Courses in the Business Department : 1. The Commercial Course ;
2. The Course in Stenography and Type-writing.

1. COMMERCIAL COURSE.

The direct aim of the Commercial Course is to prepare young men and women for positions as bookkeepers and clerks; but the training in systematic habits of work, the practice in rapid and accurate calculation, the constant exercise in written reproduction of lessons, lectures and readings, all contribute to that general cultivation of the mind and discipline of the faculties which are necessary to the right conduct of life.

It is not intended in this course to cover the ground of business in all its forms, but to lay a broad and sure foundation for the ready understanding of individual practices in different kinds of business.

The course of instruction is as follows:—

First Term.—Practical Arithmetic; Penmanship; English; Theory and Practice of Accounts; Bookkeeping; Type-writing; Commercial and Industrial Geography; Outlines of Municipal, State, and Federal Government; Lectures.

Second Term.—Commercial Arithmetic; English; Theory and Practice of Accounts; Bookkeeping; Type-writing; History of Commerce; Elements of Business Law and Economics; Lectures.

2. COURSE IN STENOGRAPHY AND TYPE-WRITING.

The object of this course is to prepare young men and women for employment as secretaries, amanuenses, and reporters.

The course includes Stenography, Type-writing, English, Correspondence, Business Forms and Accounts, Legal Forms.

The training in English is thorough, great stress being laid upon spelling, punctuation, nice distinction of terms, correct forms of correspondence, and prompt and accurate transcription in type-written forms.

The course occupies two terms.

Admission.—No student will be admitted to the Business Department who has not had at least a good elementary education.

The sessions of the Business Department are from 9 a. m. to 2 p. m.

Fees.—The fee for either Course is twenty dollars per term. A charge of \$3.50 is made each term for the stationery and other supplies used by the student. The term is five months.

Fees and charges must be paid in advance.

Application for admission should be made by letter, or in person, at the office of the Secretary and Registrar of the Institute, between 9 a. m. and 4 p. m.

May 10th, 1892.

DEPARTMENT OF PHYSICAL CULTURE. 1892-3.

First Term begins September 12th, 1892.

Second Term begins February 1st, 1893.

The Department of Physical Culture has been organized for the purpose of furnishing thorough and systematic physical education. The training begins with simple exercises and gradually leads to more complex movements, the aim throughout being the harmonious development of the bodily powers in their relation to sound mental action. The methods of training are founded on physiological and hygienic principles and are in accordance with the teachings of the highest authorities on physical education. From first to last, the object kept in view is the cultivation of a healthy physique, rather than gymnastic feats.

The Gymnasium is a large, well-lighted, and well-ventilated hall, and is unsurpassed in the completeness of its appointments. The apparatus was designed and

constructed under the immediate direction of Dr. Edward M. Hartwell, the President of the American Association for the Advancement of Physical Education. In connection with the Gymnasium there are two suites of finely-appointed marble baths.

SPECIAL CLASSES FOR LADIES.

The Gymnasium is primarily intended for the physical training of the students connected with the several departments of the Institute, but the following special classes for ladies have been organized for the year 1892-3:—

Morning Class.—Tuesday and Thursday, at ten o'clock.

Afternoon Class.—Monday, Wednesday, and Friday, at three o'clock.

The members of all the classes are required to provide themselves with a suitable gymnastic dress.

The Director exercises immediate supervision over all the class-work and the use of the baths.

NORMAL COURSE.

This course is designed for the training of instructors and directors of physical culture. The work is founded upon the Swedish System, but opportunity is furnished for acquiring a knowledge of other methods of physical education.

The course of instruction and training embraces:—

1. Anatomy and physiology—systematic and applied.
2. Hygiene and sanitation.
3. The theory and practice of gymnastics.
4. Anthropometry—lectures.
5. Emergencies—lectures.
6. History of gymnastics in its educational relations.

The Library of the Institute is well supplied with books relating to the subjects embraced in the course of instruction and training.

FEES.

Morning Class, ten dollars per term; Afternoon Class, fifteen dollars per term; Normal Class, thirty dollars per term. The term is five months.

Evening classes are provided during the winter months, the particulars of which will be announced hereafter.

Application for admission should be made by letter, or in person, at the office of the Secretary and Registrar of the Institute, between 9 a. m. and 4 p. m.

May 10th, 1892.

A visit by the writer to the Institute in June, 1892, showed several of the above Departments in active and successful operation. The Drawing, Painting, and Modelling rooms, were also open, though as yet but partly supplied with models, and work was already begun by a few pupils; as was also the case in the elementary manual training course in woodworking. In the fine gymnasium, a class of girls were actively engaged in the various exercises under the direction of an efficient woman teacher. Everything indicated awakening activity and the Educational Departments of the Institute will doubtless be in the full tide of work during the autumnal sessions of 1892.

Something of what is proposed may be gathered from the following statements showing the undertakings now in hand. The casts from the antique, of which some noble ones are already in place, are to be largely increased. Four young artists trained in the best

Parisian ateliers and who have each won distinction while prosecuting their studies abroad, have already been secured as instructors in the Art Department. These are Mr. Clifford P. Grayson, (oil painting); Mr. Will S. Robinson, (water-color); Mr. James Wood, (drawing from the antique); and Mr. Charles Grafley (clay modelling).—

As a large number of instructors in the several departments are still to be chosen, no correct list of the Faculty of the Institute can be given at present.

The courses for the winter “evening classes” are being carefully arranged by the President, as are the proposed courses of lectures on Art and Science, which latter are to form a prominent feature in the work of the Institute.

Negotiations with Guilmant, Widor, and Best, three of the greatest organists in Europe, are being prosecuted with a view to the giving of public organ recitals in the great auditorium where is placed the splendid organ. In this feature of an endeavor to develop and cultivate in the community a taste for the higher order of music, the Drexel, aligns itself with the Peabody, of Baltimore.

In the Department of Applied Art the President inclines to appoint practical craftsmen, so that in this feature the work of the Institute will be that of the “Trade School;” from which the pupil is expected to graduate as a “skilled workman.”

In these concise statements made to me by President MacAlister, something of the wide embracing scope of the Institute is shown. It will be seen that it touches the community in many interests and must influence more or less directly nearly all classes. It is, in fact, a new kind of “University;” though in striking contrast with the mediæval ideal of the cloistered and clustered colleges whose totality then made the “University.” Here, under one roof, are grouped the varied Departments in which many kinds of learning, both practical and theoretical, may be pursued; but this is to be a “People’s University,” in which the scholars are in full touch with the life about them, not sedulously secluded and set apart from common interests. The aim here, on the one hand, is rather to raise the community to an appreciation of Art, and Science, and Literature, by giving to all, opportunities to know their interest and value, than simply to train a few scholarly recluses; while, on the other hand, the students are, in the majority of cases, trained in those arts and in that knowledge which will serve to make them active and useful workers. In this way the Drexel will exert a direct influence upon the life of the people, by adding to their prosperity, comfort and happiness.

A careful inspection of the building under the courteous guidance of Dr. MacAlister, served but to increase the visitor’s appreciation of the intelligent prevision which, in planning for the several departments, seems to have foreseen all needs and to have anticipated

every possible contingency.—The basement of the building is given to the wood and metal workshops and to the electrical and steam plant for heating and lighting.

The health and comfort of the pupils has been steadily kept in view, and cloak rooms and lavatories provided in abundance; while every requisite appliance for educational work in each of the Departments has been procured with but one thought in view, namely: to secure that which is best and most useful without regard to its cost.

Whatever wise expenditure of money can effect in furnishing the material and implements requisite for varied educational needs, is here shown; combined as these facilities are with unusual directive capacity and wide experience in the person of the President of the Institute, the success of this noble undertaking may be confidently predicted.

Interesting as is a general survey of the building and its appliances, it is in the Library, and the Museum, that at present, at least, the interest of the visitor is most fully awakened and gratified. Opening on the left from the entrance chamber, the Library and Reading Room, occupy a noble room of 120 feet in length by 60 feet in width; while the Museum, on the right of the entrance, occupies a room 70 feet square. On the walls of the Reading Room, which is separated from the book stacks of the Library only by a low railing, are hung fine impressions of rare old engravings; similar examples of the engraver's art adorn the walls of the corridors throughout the building, transforming these by their subtle refining influence to veritable Galleries of Art, in place of the more prosaic hall ways which they had otherwise been.

On a long table in the Reading Room, protected from profaning hands by heavy glass cases, is shown a very remarkable and precious collection of original manuscripts by famous English and American authors. Here, just as the writers left them, are the written pages of many of the works which have charmed so many generations of readers. To hero and relic worshippers, these must prove of fascinating interest. This well known collection was made a labor of love extending over many years, by Mr. George W. Childs, the personal acquaintance and friend of most of the distinguished people of his time, and himself one of the most widely known and best loved of Americans.

To him, doubtless, many of these manuscripts have a strong personal interest and are linked to the past by happy memories. It is therefore no slight evidence of his interest in the Drexel Institute that he has given to it these treasures.

As illustrated works of Art, Architecture, and Technical works on Design, are all so costly as to be beyond the means of most art students, especial pains has been taken to secure the most desirable of such works for this Library; and it probably has already the best collection of Art books in the city. The enriching of this section of the Library, will be one of the main purposes to be kept in view

in its enlargement. To those who chance to know of the admirable educational Library collected for the office by Dr. MacAlister, during his term as City Superintendent of Philadelphia, no further assurance that the books of the Drexel Library will be wisely chosen, and that a liberal and Catholic taste will guide in their selection, is needed. The wants of the student readers will be met by the providing of the current periodicals of the world, in the Reading Room; where, also, the books of reference required by them are accessible. By the autumn of 1892, it is expected that the volumes in the Library will number ten thousand. Two hundred and fifty periodicals, representing Literature, Science, Art, and Technology, are now taken for the Reading Room. While a good beginning of the Library, as well as of the Museum, has thus been already effected; it is in these departments that the collections must be continually added to, if the Drexel is to attain the proud distinction to which it aspires.

The Museum, in which numerous cases are now arranged, already possesses many articles of great value and interest, and is, at present, most pleasant to visit, from the sense of space and the opportunity thus given of studying the different objects, which, in most crowded collections, it is extremely difficult to do.

A fine marble statue of "Sappho," by Story, occupies the center of the room, while the cases are filled with many single articles of great value and beauty, illustrating the art of the goldsmith and the potter through many centuries and in many lands. There are, also, many miscellaneous articles of interest placed about the room, while several screens covered with examples of textiles, arranged with a view to studies in design and color, show the beginning of an historic and technical collection of specimens of the art of the weaver. While the collections, as a whole, yet lack that completeness in examples of the varied arts, which is requisite for an ideal Technical Museum it is interesting to know that additional collections are now in hand, or being secured, which will go far towards filling such gaps.

Some very beautiful examples of both mediæval and modern art work, which had just been received from Europe and were not yet placed in the cases, were shown me by the President.

Among these ancient art treasures, precious alike by reason of their age and their art, were rare old laces, exquisite embroideries, and priestly robes, the latter glowing with color and heavy with the golden splendor of their lavish enrichment;—doubtless of old time worn by archbishops and cardinals when in the performance of the most exalted functions and resplendent ceremonials of the magnificent service of the Church. All these relics of the Past were so many striking proofs of the wondrous skill of mediæval textile art workers: with these, also, were shown three or four pieces of modern Italian wood carving by the artist Frullini, as in proof that the gift of artistic genius, and the mastery of art technique, have in no

wise departed from that glowing land where mediæval art first woke to life at sight of the long buried and forgotten glories of the Greeks.

These examples of wood carving—some of which are graceful designs of plant forms, flowers and ferns, very realistic and in low relief; while others, are groups of charming child cherubs, full of poetry and in very high relief—are marvellous in their qualities of technical skill and poetic treatment; combining in grace, freedom, and vigor, the arts of Painter and Sculptor. These sculptured groups, whose airy lightness recalls the ethereal grace of the cherub groups of Corregio and Raphael, seem almost the very apotheosis of the skill of the wood carver; whose work has, heretofore, commonly been reckoned rather as a craft than an art.

These beautiful and priceless works, to which were soon to be added many choice objects of “Salviati” glass, recently selected in Venice, form but a portion of a separate collection, of old and modern textiles, wood carvings, glass, ceramics, and metal work, then being made in Europe, by Mrs. Paul, the daughter of Mrs. Drexel; designed by her to be placed in the Museum, in cases by themselves, as a “Memorial” of her mother. From the examples so far received this promises to be the finest gift yet made to the Museum.

Already, before these words are written, the startling news of the decease of this loving daughter is announced. The unfinished collection will serve as a double memorial of love and sorrow!

“The unfinished window in Aladdin’s tower,
Unfinished must remain!”

Thus, at the very opening of its career, this youngest Institution begins to gather about itself those precious memories that give to History its pathetic and enduring charm; that perpetually make of every Library, every Museum, every Institution of Learning, a splendid *memento mori*—“*dere perennius*.”

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 GEORGE W. CHILDS, *Vice-President*.
 ANTHONY J. DREXEL, JR., *Treasurer*.
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Anthony J. Drexel, Richard C. Dale, George W. Childs, Anthony J. Drexel, Jr., James W. Paul, Jr.

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Until Second Tuesday in October, 1892.—Addison B. Burk, Rev. T. K. Conrad, D. D., Joseph Moore, Jr., Edward De V. Morrell, George B. Roberts, Walter George Smith, Edward T. Steel.

Until Second Tuesday of October, 1893.—John R. Drexel, George W. C. Drexel, John R. Fell, Herbert M. Howe, M. D., Wm. V. McKean, Rev. W. F. Watkins, D. D., Joseph M. Wilson.

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President of the Institute.—James MacAlister, LL. D.

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Finance.—J. Lowber Welsh, chairman, George C. Thomas, George B. Roberts, John R. Fell, John R. Drexel.

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Until last Tuesday in October, 1894.—Mrs. George W. Childs, Mrs. James W. Paul, Jr., Mrs. John R. Fell, Miss Anna Hallowell, Mrs. J. Dundas Lippincott.

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JAMES MAC ALISTER, LL. D., *President, and Professor of History and Institutes of Education.*

LUCINA A. BALL, *Secretary and Registrar.*

ALICE B. KROEGER, *Librarian.*

CHAPTER VI.

THE OHIO MECHANICS INSTITUTE, CINCINNATI, OHIO.

The movement for organizing The Institute suggested by John D. Craig, at the close of his lecture course on Natural Philosophy, in 1828—The School of Design added to the other Departments of the Institute in 1856—Historical sketch of The Institute published in 1853—meetings for considering the plan of such an Institute, held in autumn and winter of 1828-'29—Names of the first promoters of the movement—Extract from charter granted by the Ohio Legislature, February 9th, 1829—Fiftieth Anniversary—Anniversary History of the Institute—Corner stone of the Building laid July 4th 1848—Names of original Trustees—Miles A. Greenwood, Marston Allen, and John P. Foote, chosen in 1856 and 1857, as a Board of Emeritus Trustees in recognition of their distinguished services to the Institute. The Library and Reading Room of the Institute in combination with the Common School Library and under the direction of the City School Board, became the nucleus of The Free Public Library of the City.—

The Public Exhibitions held under the auspices of the Institute have become a feature of the City—These Exhibitions were suspended during the war—A "Department of Industrial Improvements" to test new inventions, organized in 1878, superseded by the "Department of Science and Art," organized in 1880; which also had charge of the Annual Volume of "Reports of Proceedings"—Volume I. issued January 1882—This movement followed by important increase in membership—Permanance of official positions; only four Presidents in sixty years—Historical Sketch of the Institute furnished in 1880 for this Report by Mr. George Graham then the only survivor of the original charter members—Brief summary of Expositions held from 1838 to 1888—Report of the great Exposition held in 1888—In its activities The Ohio Mechanics Institute resembles the Franklin Institute of Philadelphia—Courses of popular lectures discontinued in 1885—The Report of 1886—Extracts from The Cincinnati Commercial Gazette showing the educational work of the Institute schools—Tribute to the late Miles Greenwood—Resolutions by the Directors concerning the resignation of his position by Mr. John B. Heich, who for 31 years, was assistant Secretary of the Institute and Superintendent of the Schools—Sixtieth annual Report 1888—Sixty-Second Annual Report 1890—Tribute to Thomas Gilpin, President of the Institute for nearly eighteen consecutive years, who died October 26th, 1889—Sixty-third Annual Report 1891—President Allison's report in full—Financial statement for year ending April 1st. 1891—List of officers and committees for 1890-'91.—

The School of Design—Evening Drawing classes first opened in 1856, John Heich, Principal—Statement by Mr. Heich, in letter of May 1882—Drawing recognized in the first report by the Principal as of prime importance—Mr. Heich, quotes largely in his report from Mr. Minifie, at that time the accomplished principal of the Maryland Institute Schools in Baltimore—Mr. Heich, shows in his report the

relations borne by trained skill to the manufactures of a country, the practical value of a knowledge of drawing and designing—Report of diminished attendance in 1861-'62, owing to numerous enlistments in the Armies of the Union—Two years later attendance again increased rapidly—Decrease in attendance in year 1870, attributed to opening of the school of the McMicken University, and to the introduction of Drawing in Public Schools of the City—Both induced indirectly by the example of this school—The school flourishing at the time of the 50th anniversary of the Institute—Its organization and courses of instruction detailed—The school prospectus quoted in Directors Report 1879—Increased attendance in 1879-80—The results obtained by Industrial Drawing classes should lead directly to establishing of Technological Schools for training in artistic instructions—How the introduction of elementary drawing in public schools enables voluntary institutions to enter upon higher training, is shown in Fifty-Fourth Annual Report, 1882—Report of Principal, 1882—Programme of studies, rules and regulations of school.

The School of Technology—The Fifty-Fifth Annual Report (1883) records the changes in the school now to be known as The School of Technology—Report of special committee of Directors on Technological Education, with Reports of Committees of Board of Trade—The Great Industrial Expositions have been held since 1870, under direction of a Board of Commissioners; which includes representatives from "The Chamber of Commerce," "The Board of Trade," and "The Ohio Mechanics Institute"—Attendance on the new School of Technology, 1882, 364—Report for 1883, shows increase to 423—Extracts from succeeding report by Principal Heich. Principal Heich's final Report for the year 1886-1887—First report for 1887-1888 by Mr. R. E. Champion, the successor of Principal Heich, showing changes in courses of study—Extracts from subsequent reports by Mr. Champion—Report for 1890-'91—Extracts from Mr. Champion's letter of December 11th, 1891—

THE OHIO MECHANICS INSTITUTE, CINCINNATI, OHIO.

This association, the movement for which was begun in 1828, is similar in its purposes and instrumentalities to the Maryland Institute, of Baltimore, and the Franklin Institute, of Philadelphia.

In 1856, it added to its other educational facilities a "School of Design," an account of which is necessarily included among those in this Report.

The following extract from the Historical sketch printed by order of the Institute in 1853, shows the origin of the Institute and gives the names of the charter members.

"The first movement toward the formation of a Mechanics' Institute in Cincinnati was made by John D. Craig, who, at the close of a course of lectures of natural and experimental philosophy, suggested to the class the propriety of establishing such an institution; with an explanation of its objects and advantages. Several influential citizens became interested in the plan he suggested, and it was determined to carry it into operation.

"At a meeting of the citizens of Cincinnati, commenced on the evening of October 25, 1828, by a public notice signed by W. Disney, Luman Watson, John P. Foote, and John Locke, for the purpose of taking into consideration the propriety of establishing a Mechanics' Institute, Luman Watson was called to the chair. Mr. Foote then proceeded to explain the object of the meeting after which the subject was discussed, and the following resolutions offered and adopted, viz:

"That it is expedient for a Mechanics' Institute to be formed in this city.

"That John P. Foote, Luman Watson, John Locke, J. Bonsall, and W. Disney, constitute a committee to report a plan for the proposed Institute.

"That this meeting request Mr. Craig to deliver a discourse on the subject of 'Mechanics' Institutes' at the next meeting.

"That the committee already appointed be authorized to publish the proceedings of this meeting, and convene another by public notice.

"On motion adjourned. .

JOHN LOCKE,
Secretary.

"At a meeting of the citizens, convened agreeably to a resolution of the 25th of October, and held November 20th, 1828, the Rev. E. Slack in the chair.

"Mr. Craig delivered a discourse on the subject of Mechanics' Institutes, after which Mr. Foote read the report of the committee appointed at the last meeting, and, on motion, the report was accepted.

"The Constitution was read, and, after some amendments, adopted."

THE CHARTER OF THE INSTITUTE.

The next step was to petition for a charter, which was granted February 9th, 1829.

[Extract from the Charter of Incorporation.]

"SECTION 1. *Be it enacted by the General Assembly of the State of Ohio*, That John D. Craig, John P. Foote, Thos. Riley, Luman Watson, Wm. C. Anderson, David T. Disney, George Graham, Jr., Calvin Fletcher, Clement Dare, William Disney, William Greene, Tunis Brewer, Jeffrey Seymore, Israel Schooley, and Elisha Brigham, with their associates, who have associated together in establishing an institution in the city of Cincinnati, for advancing the best interests of the Mechanics, Manufacturers, and Artisans, by the more general diffusion of useful knowledge in those important classes of the community, together with such persons as may hereafter become members and contributors to the same, be, and they hereby are, created a body corporate and politic, with perpetual succession, by the name and style of the 'Ohio Mechanics' Institute."

At a meeting of the Board of Directors, held July 2nd, 1878, in view of the soon coming 50th Anniversary of the Institute, the clerk was directed to prepare a history of the Institute for the twenty-five years which had elapsed since the publication of the historical sketch of the first twenty-five years of the life of the Institute, published in 1853.

In accordance with this order, a handsome volume of ninety pages, with an illustrated frontispiece giving a view of the commodious building, the home of the Institute, on the corner of Sixth and Vine Streets, was prepared by Mr. Heich, and published by the Society.

The early history of the Society, with an account of its various struggles and homes, was detailed in the publication of 1853. A brief summary of these events is given in the account which follows, furnished by Mr. George Graham, a former Vice President of the Institute, for this Report.

The corner stone of the present handsome building was indeed laid with due ceremonies, July 4th, 1848, but the Society, in 1853, the date when the later history begins, was encumbered with a debt of nearly fifty thousand dollars. Mr. Miles Greenwood, and Mr. Marston Allen, two of the Trustees, gave in 1854, the former, \$12,476.73 and the latter, \$5,349.55 towards the liquidation of this debt, which was finally paid off August 1st, 1856.

The donation by the Trustees had been made on condition that the balance of the debt against them as Trustees should be paid. The citizens subscribed liberally for this purpose but owing to a sudden financial crisis, only about half of the indebtedness was then collected. However the Institute was freed from debt as just stated in 1856. The original Trustees appointed to secure a home for the Institute in 1847 were Messrs. Miles Greenwood, Charles Sellers, and Daniel F. Meader. Mr. Charles Sellers, having resigned shortly after his appointment, Mr. Marston Allen, was appointed in his place. The property having been entirely paid for, the Trustees surrendered their trust, after deeding the property to the Ohio Mechanics' Institute.

"At a meeting of the members of the Ohio Mechanics' Institute, held December 16th, 1856, as a token of its appreciation, and to keep in remembrance the honorable memory of Miles Greenwood and Marston Allen, and expressive of the many obligations due them for their long and honorable record in behalf of the Ohio Mechanics' Institute, elected them as a Board of Emeritus Trustees and Advisory Directors for Life; a title most nobly earned and to which they were justly entitled." *

The School of Design was organized in the autumn of the same year and has since been successfully conducted. The Library, was combined with the Common School Library, and so, a Union Free Library was formed. This was officered by the City School Board, and occupied the second story of the building of the Institute, to the mutual advantage of the Institute, and the School Board, and was the beginning of the successful free-public library of the City, to which the Institute thus contributed 7000 volumes and furnished all the newspapers and periodicals for the reading room. Courses of popular science lectures were held by the Institute for several years, and a permanent Mechanical Museum was proposed.

However, the public exhibitions held under the auspices of the Institute met with more of popular favor, and were, generally, profitable to the resources of the Institute. These exhibitions were suspended during the years of the War of the Rebellion. A summary of the various exhibitions is given later.

The death of Mr. Marston Allen, August 12th, 1868, in the eight-

* "At a meeting of the Institute, held March 10th, 1857, John P. Foote, was also elected unanimously as one of the Board of Emeritus Trustees, in view of his active endeavors on behalf of the Institute, and his services as President for eighteen years, from 1828 to 1847."

ieth year of his age, is commemorated in a series of appreciative resolutions by the Board of Directors. A life size portrait of this life long friend of the Institute hangs in the large hall.

In 1878, a "Department of Industrial Improvements" was organized; to examine and test new inventions, and to bestow awards of medals and certificates, for "Articles of exceeding Merit."

In December 1880, a "Department of Science and Arts", was finally organized; both for the purposes of the department just noted and, also, for the publication of an annual volume of Reports of Proceedings,* to consist of four numbers and containing the papers, discussions, etc., of the regular meetings which are held on the second Thursday of each month. In this feature, the Institute resembles the Franklin Institute; as, also, in its relation to the exhibitions. This movement added a hundred members from the leading scientists and from the most enterprising manufacturers of the City.

A record of names of the Officers, and Directors, of the Institute, from the first election in December 1828, to that for the year 1878-'79, is appended to the Fiftieth Anniversary Volume. From this it appears that, in the matter of the permanence of official position, the Institute has been most conservative.

Mr. John P. Foote, held the office of President continuously from 1828 to 1846-'47. Mr. Miles Greenwood, his immediate successor, chosen for 1847-'48 likewise continued to preside down to 1853-'54. The administration of Mr. Charles F. Wilstach, began 1854-'55 and continued through 1870-'71. Mr. Thomas Gilpin, assumed the Presidency for 1871-'72, and is still recorded as President in the Sixtieth Annual Report for 1887-'88. It thus appears that only four Presidents have been chosen during the entire sixty years of the life of the Institute! The same Directors are, in like manner, continued from year to year. The name of Mr. George Graham, author of the historical memoranda given later, appears in the first list of Directors and continues for many years; he was Vice President in 1853-'54.

The following brief history of the Institute was kindly prepared for this Report by Mr. George Graham, of Cincinnati, in the summer of 1880. Mr. Graham, always active in all educational movements and especially in those looking to the training of artists and of workers in the Industrial Arts, was the last survivor of the original Charter Members of the Institute.

* "Vol. I. January, 1882, No I. Scientific Proceedings of the Ohio Mechanics' Institute Publishing Committee. R. B. Warder, Chairman. Ormond Stone. H. T. Eddy. L. M. Hosea. Published by the Ohio Mechanics' Institute, Cincinnati, Ohio. Pp. 48."

OHIO MECHANICS INSTITUTE.

HISTORICAL SKETCH FURNISHED BY GEORGE GRAHAM, ESQ., OF CINCINNATI.*

The Ohio Mechanics Institute was founded in 1828. Its chief object—although other objects appeared more prominent, and have since become still more so—was to aid in removing the evils of popular ignorance. Its founders intended to provide the means of acquiring a knowledge of any, or all of the sciences and arts, for all those whose tastes should lead them to cultivate a more extensive field of knowledge, than is afforded by our common schools. They considered that to insure the permanent prosperity of our country, the poor should be as well educated as the rich, and thus remedy as far as practicable, the evils that arise from the influence of the (so called) educated men. It was thought necessary that young men when acquiring their educations, or rather when they are acquiring those aids to education which are taught at the schools, should have the opportunity of bestowing their attention upon those subjects from which they feel that they can derive the greatest profit, and it was considered improper in these United States to educate men to be machines, (as if subjects of Austria or Russia); but to have them capable of making machines with which to speed the progress of human improvement through the proper cultivation and use of the powers of mind and body bestowed upon them by the Creator. Under the influence of such sentiments the Institute was established in 1828.

A resolution of the citizens was passed at a Public meeting, appointing a committee to prepare a plan and constitution, and an address, which were adopted. An act of the Legislature was passed granting a charter and organization. Dr. John D. Craig, who had been an eminent teacher of Natural philosophy in Philadelphia was appointed President, and commenced in the old college building a course of Lectures, on the Mathematical and Physical Sciences; and lectures on various subjects were regularly delivered by volunteer lecturers.

It was soon however discovered that funds were wanting, and the sources of supply were not sufficient to support the Institute. Various modes of obtaining indirect contributions from the citizens were proposed, and among them a Public Ball seemed to meet the most favor and was adopted. It was to be a mass meeting of the lovers of amusement with all who were willing to make a small indirect contribution to the success of a valuable Institution. To obtain a floor sufficiently extensive, the Theatre was taken, and the Pit floored over and connected with the Stage; the Boxes were appropriated to those who desired only to enjoy the sight of a splendid pageant. The pecuniary result was a sum of upwards of three thousand dollars net, to the Institute.

THE TEMPORARY HOMES OF THE INSTITUTE.

The want of a building for the Institute was supplied at that time by the liberality of three of the members John P. Foote, Calvin Fletcher and Geo. Graham, who

*CINCINNATI, June 25th, 1880.

Col. CLARKE,

DEAR SIR: * * * "The statement in regard to the school, its origin, etc., was furnished, for your use, by Mr. George Graham of this City, the only charter member of the Institution now living, a man who has been connected, generally at the head with money and brains, with almost every enterprise looking to the commercial and educational interests of this City.

Respectfully,

C. T. WEBBER."
(In charge of Life Class.)

purchased the church on Walnut St. between 3rd & 4th Sts. and held it for the Institute to purchase at any time when it was convenient to raise the money.

This building afforded ample accommodation for the classes and Teachers, Dr. Locke being employed as teacher of Chemistry and other branches at a salary of \$400 per year. About 60 apprentice boys were taught in the different branches of science and for several years the classes were kept up; but the principal part of the expenses were paid by the owners of the building, and at that time the members and subscriptions failed to pay even a small part. The consequence of this compelled the owners of the building to sell it at Public Sale and then the Bazaar building erected by Mrs. Trollope, and taken by her creditors, was offered at less than half the cost \$10,000 to the Institute. The building was sufficiently large for the purposes of the Institute for several years, furnishing two spacious halls with rooms for library for the Academy of Natural Sciences, and other purposes, with sufficient accommodations for the professors. Dr. Craig and Dr. Locke delivered valuable courses of Lectures on Natural Philosophy, for the Illustration of which the valuable apparatus of Dr. Craig was used to elucidate and give interest to his teachings. This apparatus when Dr. Craig left the Institute was purchased by Jephtha D. Garrard, and presented to the Institute, and is still in use with many additions in the rooms of the present building on 6th Street. During Dr. Locke's administration besides his regular courses of Lectures, many valuable volunteer lectures were given, several classes for mutual instruction in the sciences and arts were established, together with one for architectural and mechanical drawing.

Many pupils who have since become distinguished members of society in different vocations received in these classes, and from these lectures, the impulses which made them afterwards eminent.

NEED OF AN ENDOWMENT.

But the radical defect, the want of endowment for the Institution was increased by increased expenses. A heavy weight was on the Institution which discouraged many of its friends and made them willing to abandon it. For sometime, it appeared to be declining, the stimulants which had kept it up lost their effect. The langour which in such cases is generally experienced, supervened, and the discouragement was so deeply felt that a committee consisting of George Graham and John P. Foote, was appointed to enquire whether the prospects were so hopeless, that it would be best to abandon the Institute to its fate, or to make a new effort for its re-establishment. This committee made a report strongly recommending the latter course; as so valuable an Institution, which had already done so much good, and was capable of continuing to do more could not be suffered to decline and die without disgrace to the city, and being a precursor of its own decline. A subscription was then set on foot and it was found that so many public spirited citizens were ready to give them pecuniary aid that the spirits of its friends revived.

As its first want was a suitable building, constructed especially for its purposes. It was determined that as soon as the subscriptions should amount to ten thousand dollars a building should be commenced. This was soon exceeded by the showing of the subscription books. Miles Greenwood was elected President of the board of Directors, and with their concurrence the present beautiful hall of the Institute was begun and completed at an expense of about fifty thousand dollars besides the price of the ground, leaving a heavy debt to be liquidated. Of this seventeen thousand dollars was due to the President and five thousand to Marston Allen, each of these gentlemen proposed to relinquish his claim in full, provided the other debts of the Institution, amounting to as much more should be paid before a specified date. So liberal a proposition it was impossible for the city to disgrace itself by declining, and a committee was appointed to raise the required amount from the citizens. This committee consisted of C. Willstach, Geo. Graham, Mr. Dale and others who

found a ready response from the mechanics and others, who subscribed more than enough to pay all the pressing debts of the Institute.

THE PERMANENT HOME OF THE INSTITUTE.

On the 4th of July 1848 the corner stone of the building was laid. It has a front of ninety feet on Vine street and sixty on 6th Street covering 5,400 square feet of ground. A part of the lower story is rented for stores and a revenue is derived from one of its Halls.

The Bazaar building was sold to pay the original debt of purchase, and the Institute commenced in the new building free of debt.

THE ANNUAL EXHIBITIONS.

The first Annual Exhibition, or fair, was held on the 30th and 31st of May 1838, and much of the mechanical skill and talent of the city was there represented. The third Exhibition was held in 1840, in the Bazaar on 3rd Street and at this exposition the members experienced an unexpected gratification in receiving Genl. Solomon Van Rensselaer, who had been stationed on that spot when commanding Fort Washington in 1792. It is now 88 years since the national flag waved over a lone fortress surrounded by a few log huts, where the Bazaar stands. Around the Fort was the unbroken forest, penetrated only by the war path of the Indian, and the track of the buffalo. Standing upon the ramparts of that fort, the eye of the beholder would have rested on the pristine verdure of the luxuriant forest and on the placid stream of the Ohio, seldom disturbed even by the light craft which then floated on its bosom—his ear would have heard at dawn the martial notes of the reveille, and at night the hooting of the owl, and the savage bay of the prowling wolf. Now that spot is the centre of a populous city, surrounded by all the refinements of wealth and cultivation—a city numbering with its suburbs three hundred thousand souls and embracing a vast amount of the industry, the energy and the excitement of business.

The Institute gave its first Exhibition in 1838, and continued giving yearly exhibitions until the 18th had been given, and in 1870, the Institute united with the Chamber of Commerce and the Cincinnati board of trade in a grand Exposition of manufactures products and Arts. The Exposition was opened Sept. 21st and continued until October 22nd 1870.

The Exposition was an entire success, the receipts amounted to more than \$50,000 and it was visited by more than three hundred thousand persons from all sections of the Union.

In September 1871, the second Cincinnati Industrial Exhibition of manufactures, products, and arts, was held September 6th until October 7th 1871.

The receipts of the Exposition amounted to nearly \$75,000 and it was visited by more than 400,000 persons.

The third grand Industrial Exposition of manufactures, products, and arts was held in September and October 1872 and was a success in every particular. The receipts were over \$100,000.

The Industrial Exposition of 1873, was held under the auspices of the committee of 1872 and was visited by more than half a million of persons.

The Exposition of 1874, and 1875 were held and proved a success.

The great Exposition of 1879, given in the Music Hall by the Chamber of Commerce, the Board of Trade and the Institute was a complete success in every respect.

As in the Fifty-Seventh, Fifty-Ninth, and Sixtieth Annual Reports by the Board of Directors, the history of the Expositions is

continued, thus supplementing the statement made by Mr. Graham, the extracts relating to them follow here:

The holding of the Twelfth Cincinnati Industrial Exposition, is thus recorded in the Report for the year ending April 1st, 1885.—

“INDUSTRIAL EXPOSITIONS.

The Twelfth Cincinnati Industrial Exposition was held under the same auspices that have so efficiently conducted the series of exhibitions that have been held in Cincinnati since 1870.

BOARD OF COMMISSIONERS.

Chamber of Commerce.—Edwin Stevens, Jas. B. Wilson, L. H. Brooks, W. P. Walker, Jr., Chas. H. Jacob.

Board of Trade.—T. E. Livezey, J. C. Hussey, C. W. Withenbury, E. L. Mehner, M. E. Kuhn.

Ohio Mechanics' Institute.—J. F. Walton, Wm. L. Dudley, L. H. McCammon, Samuel R. Smith, James Allison.

Officers.—Edwin Stevens, President; J. C. Hussey, First Vice-President; Wm. L. Dudley, Second Vice-President; W. P. Walker, Jr., Third Vice-President; J. F. Walton, Secretary; M. E. Kuhn, Treasurer; John B. Heich, Assistant Secretary.

The Twelfth Exhibition of Industry and Art opened Wednesday, Sept. 3, and closed Saturday, Oct. 4, 1884. As a display of inventions, manufactures, products and arts, in many particulars it was superior to any of the Expositions previously held in Cincinnati. The Machinery and Art departments were unusually meritorious, and the display of domestic manufactures was exceedingly varied and interesting. A new departure was the collective exhibits representing the various departments of the United States Government, which were generally acknowledged to be the most attractive and instructive feature of the Exposition. Want of space prevents a detailed description of this important display which was thoroughly examined and appreciated by all visitors. The Exposition was attended by 327,175 visitors, which was a large increase over the previous year.”

This Exposition was not a financial success and it was decided not to hold another until 1886.

The Thirteenth Exposition held in 1886, is thus noted in the Fifty-ninth Annual Report.

“The Thirteenth Cincinnati Exposition, held in 1886, was designated the “Inauguration of the New Series,” from the fact that the Twelfth Exposition held in 1884, was termed the “Culmination of the Series.”

The Exposition was a pronounced success in every particular, having paid all its expenses and passing to its successors about six thousand dollars. The Exposition was organized with many misgivings, and for this reason its success was more than gratifying.

The Exposition opened September 1st, and closed October 9th, remaining open one week longer than at any previous time.

BOARD OF COMMISSIONERS.

Chamber of Commerce.—Edwin Stevens, Jas. B. Wilson, L. H. Brooks, W. P. Walker, Jr., Sam'l W. Trost.

Board of Trade.—T. E. Livezey, J. C. Hussey, E. L. Mehner, M. E. Kuhn, Richard Woolley, Jr.

Ohio Mechanics' Institute.—L. H. McCammon, James Allison, Geo. A. Gray, Jr., A. B. Champion, P. G. March.

Officers.—Edwin Stevens, President; James Allison, First Vice-President; J. C. Hussey, Second Vice-President; L. H. Brooks, Third Vice-President; L. H. McCammon, Secretary; M. E. Kuhn, Treasurer; John B. Heich, Assistant Secretary.

The Commissioners for the Fourteenth Exposition were recently appointed, and after a full discussion it was unanimously agreed not to hold an Exposition in 1887, but in lieu thereof to hold a Grand Exposition, upon a much larger scale, in 1888, in commemoration of the Centennial of the Settlement of Ohio, and to be designated as the "Centennial Exposition of the Ohio Valley and the Central States." The following named gentlemen have been elected as the officers: James Allison, President. L. H. Brooks, First Vice-President. Richard Wooley, Jr., Second Vice-President. L. H. McCammon, Third Vice-President. M. E. Kuhn, Treasurer. E. O. Eshelby, Secretary."

In the Sixtieth Annual Report for the year ending April 1, 1888, the Directors claim as the peculiar distinction of the Institute, the inception of these now famous expositions, and proceed to describe the preparations made for holding a great Centennial Exposition to open July 4th and close October 28, 1888, as follows:

EXPOSITIONS.

Cincinnati, justly and with pride, styles herself the "Mother of Expositions," but the Ohio Mechanics' Institute is both father and mother of the Expositions held in Cincinnati, and, in fact, the United States.*

In May, 1838, in Madam Trollope's Bazar, near the southeast corner of Third and Broadway, in this city, the Ohio Mechanics' Institute held its first exhibition. The receipts of this exhibition amounted to \$1,276.27. Expenses, \$290.47. The Institute continued to hold Expositions from year to year, until they assumed such proportions that in April, 1868, it invited the co-operation of the Cincinnati Chamber of Commerce and the Board of Trade, and the following resolution was adopted: "We would recommend that, for the future, owing to the large expenses incident to an Exposition, that the manufacturers, merchants, artisans and others pecuniarily interested, should be requested to conditionally subscribe a guarantee fund, to be used only in case of loss in holding subsequent Expositions." In the autumn of 1869, the Chamber of Commerce and the Board of Trade appointed committees to co-operate with the Institute, and "At a meeting of the Board of Directors held October 5, 1869, a resolution was unanimously adopted, that the Ohio Mechanics' Institute hold a Grand Industrial Exposition, during the fall of 1870."

THE GRAND INDUSTRIAL EXHIBITION.

This Exposition was opened September 21, and continued until October 22, 1870. It was an entire success, being the largest and most complete Exposition ever held in the United States. The receipts were over \$50,000, and the visitors numbered over three hundred thousand. It paid all expenses, leaving a small balance on hand. Thus was inaugurated the First Cincinnati Industrial Exposition.

All are familiar with the next twelve Expositions held in Cincinnati. For the

* As the Franklin Institute, of Philadelphia, held, in 1824, the first of the long series of Expositions since held under its auspices; the claim that the Ohio Mechanics Institute, in 1838, introduced these Expositions to the United States, is hardly tenable; although this claim as far as it relates to the city of Cincinnati, seems good.

promotion of these annual Expositions, by the munificence of R. R. Springer, and of the merchants and manufacturers of this city, were erected the spacious and magnificent permanent buildings, Music Hall and its adjuncts, known to the world by numerous conventions, mass meetings, festivals, public ceremonies and exhibitions there held. These elegant and substantial structures, with the grounds they occupy, *cost over one million dollars*, and there these Industrial Expositions have been carried on as public enterprises, without hope or expectancy of gain, without other aid than the contributions of private individuals, simply that all who chose might see the progress of civilization from year to year. In like manner was the Centennial Exposition organized, and from it no one will or can receive pecuniary profit.

THE CENTENNIAL EXPOSITION.

Early in the year 1886 the citizens of Cincinnati organized a Centennial Committee for the purpose of devising ways and means for appropriately celebrating the one-hundredth anniversary of the settlement of the city, the State and the great Northwest. It was agreed that an Exposition of the products of industry, commerce, manufacture, agriculture, science, art, and, indeed, of all the visible evidences of modern progress and civilization would fittingly emphasize the significance of the occasion and show the advance made within the last century. After the close of the Thirteenth Cincinnati Industrial Exposition, the Commissioners appointed by the commercial bodies before mentioned, at the request of the people of Cincinnati and Ohio, organized themselves into a Board of Commissioners for the purpose of conducting a great Centennial Exposition at Cincinnati, in 1888. The Common Council of the City passed resolutions indorsing the project, as did the Councils of Covington and Newport, Ky., thus combining in a common enterprise the three adjoining and sister cities, containing more than half a million souls, the center of population of the United States.

On the 15th of February, 1887, the Legislature of Ohio passed resolutions endorsing and commending the vast enterprise; finding that it should "be held in a city near the center of population and most accessible to our sister States," and that "Cincinnati is so situated," directed the Governor to appoint Commissioners to represent the State, to invite the co-operation of Central States especially, and of all the States and Federal Government.

The Governor of Ohio appointed Commissioners, issued invitations to other States, and in response the Legislatures of the Central States passed resolutions of approval, and Honorary Commissioners were appointed, which, with the Governors of these States, the Governor of Ohio, and the Commissioners from Cincinnati and other cities, constitute the Centennial Board.

The citizens of Cincinnati, with but little effort, contributed as a guarantee fund the magnificent sum of one million and fifty thousand dollars. The Board of Commissioners thus being possessed of ample means, energetically pushed their enormous task to completion.

THE TEMPORARY BUILDINGS.

The city granted the use of beautiful Washington Park, immediately opposite the permanent Exposition Buildings, and there has been erected an elegant structure, cruciform in shape, 600 by 110 feet one way, and 400 by 110 feet in its transverse section, two stories in height, and adorned with a dome 140 feet in diameter, towering to an altitude of 160 feet. Attached to this central building are two spacious restaurant rooms, each 100 by 200 feet. The great feature of the interior is the absence of columns, leaving a clear floor space through the whole vast area. Washington Park, with its new buildings, is connected with the permanent Exposition Hall by an ornate bridge, twenty-five feet in width, spanning Elm street.

THE PERMANENT BUILDINGS.

The permanent buildings consist of the great Music Hall, capable of holding eight thousand people, Dexter Hall, Art Halls, Horticultural Halls, and at the Centennial will be devoted entirely to entertainment, art, flowers and still life—the center of the Exposition, from which the great crowds will distribute themselves to other buildings. Adjoining the permanent buildings to the West, and connected with it, has been constructed Machinery Hall, a great building thirteen hundred feet in length by one hundred and fifty-four feet in width, outside of which and separate therefrom, is placed the boiler house. At the 12th and 15th street ends are handsome pavilions, two full stories in height, designed for refreshment rooms. This beautiful hall, with elevated nave and windows unobstructed from end to end, produces the effect of a large Cathedral. These vast buildings have under roof the immense exhibiting space of forty-three acres—the largest connected covered area ever used for any Exposition held on the Western Continent. The Government of the United States has established regulations by which exhibits from foreign countries will be admitted in bond, with no charge for import duty unless sold in this country. The Inauguration exercises take place July 4, 1888, and the Exhibition will be continued day and night until October 27, 1888, thus giving one hundred exhibiting days and nights. In order to insure success, Commissioners this year, at their personal expense, visited the great Jubilee Exhibitions held at Liverpool, Manchester, Salt-aire, New Castle on Tyne, England; the Expositions at Amsterdam, Vienna, Paris; the Maritime Exhibition at Havre, and the National Italian Exhibition at Venice, and from all these have been gathered ideas, plans, exhibits and mechanics which will be reproduced in the Centennial at Cincinnati. All the new, wonderful and beautiful effects which have excited the admiration of the Old World, and given fresh stimulus to exhibitions, such as they have not known before on the Eastern Continent, will be realized here in the center of America, together with many features that only the New World can afford.

BOARD OF COMMISSIONERS.

Chamber of Commerce.—Lee H. Brooks, C. C. Waite, Levi C. Goodale, George B. Kerper, E. O. Eshelby.

Board of Trade.—M. E. Kuhn, Henry J. Snyder, J. M. Blair, Howard Douglass, May Fechheimer.

Ohio Mechanics' Institute.—James Allison, L. H. McCammon, George Gray, Jr., P. G. March, A. B. Champion.

EXECUTIVE DEPARTMENT.

Officers.—James Allison, President, L. H. Brooks, 1st Vice-President, Henry J. Snider, 2d Vice-President, L. H. McCammon, 3d Vice-President, E. O. Eshelby, Secretary, M. E. Kuhn, Treasurer.

Executive.—Allison, Brooks, Champion, Waite, Eshelby, Kuhn.

SPECIAL COMMITTEES.

Finance and Auditing.—McCammon, Brooks, Snider.

Contract, Privileges, and Legislation.—Douglass, Fechheimer, Blair, Champion, Brooks.

Printing & Advertising.—Champion, McCammon, Goodale, Snider.

Space and Allotment.—Snider, Blair, Gray.

Buildings.—Blair, Waite, Snider, March, Gray.

Transportation and Excursions.—Kerper, Waite, Goodale.

Rules, Jurors and Awards.—Goodale, Douglass, Blair.

ORGANIZATION OF THE EXHIBITION DEPARTMENTS.

Department of Foreign Exhibits.—Waite, Champion, Brooks.
Department of States.—Goodale, and Honorary Commissioners.
Department of Information.—Kerper, McCammon, Fechheimer.
Agriculture and Agricultural Implements.—March, Gray, Kerper.
Machinery and Mechanical Appliances.—Gray, Kerper, March.
Science, Education and Historical Relics.—Douglass, McCammon, Snider.
Music and Entertainments.—Kerper, Champion, Waite.
Horticulture, Floral Displays and Decorations.—McCammon, Fechheimer, Goodale.

Fine Arts and Ceramics.—Fechheimer, Waite, Brooks, March.
Textile Fabrics.—Snider, Goodale, Fechheimer.
Women's Department.—Goodale, Fechheimer, March.
Children's Department.—Champion, Blair, McCammon.
Furniture and Household Appliances.—March, Snider, Goodale.
Tobaccoes, Liquors and Provisions.—Brooks, McCammon, Douglass.
Railway Supplies, Hardware, Minerals and Metals.—Kerper, Waite, March.
Architecture and Buildings.—Blair, Gray, March.
Exhibitions and Special Displays.—Waite, Kerper, Douglass.

The complete organization, the experience, strength and character of the Commissioners, the advantage of situation, the magnitude and elegance of the buildings, the day and night display, the novel features from the Old and the attractive ones from the New World, the munificent guarantee fund, the central location of Cincinnati, the enthusiasm of its people, the millions interested in the great historical event commemorated, assures to this Centennial Exposition of the Ohio Valley and Central States great and unrivaled superiority and unexampled popularity and prosperity.

Looking down the vista of fifty years, the venerable members of the Ohio Mechanics' Institute can look with pride and honor upon this, the culmination of their primitive labors as one of the not to be forgotten conquests of peace."

The U. S. Congress, appropriated a fund to enable the Government Departments to be represented at the Exposition. The Smithsonian Institution, the National Museum, the Fish Commission, and the various Bureaus of the Interior Department, namely, the Patent Office, the Indian Bureau, the Geological Survey, the Department of Agriculture, the Pension Bureau, and the Bureau of Education, each sent special exhibits; as did also the Department of Justice, and the State, Treasury, Post Office, War, and Navy Departments. The Government exhibitions, while not as extensive as were those shown at the "Centennial" in Philadelphia, in 1876, are said to have been more perfect and very attractive.

The success of this great Exhibition was fully assured, so far as its value and attractiveness were concerned.

The Sixty-First Annual Report (1889), contains the following statement concerning this notable Exposition with the report made by the Commissioners appointed by the Institute.

The great Centennial Exposition of the Ohio Valley and Central States and Fourteenth Cincinnati Industrial Exposition, designed to commemorate the One Hundredth Anniversary of the settlement of the Ohio Valley and the City of Cincinnati,

was inaugurated July 4th, 1888, and closed November 10th, 1888, covering a period of 110 exhibiting days. Its history is yet to be written and limited space forbids our doing it justice and going into details of this magnificent enterprise which has added new laurels to the crown of

"The Queen of the West,
In her garlands dressed
On the banks of the Beautiful River."

It was an immense undertaking and one which justified a sacrifice of money and effort to make it a success. It was an affair of the City of Cincinnati and our citizens showed their confidence in its managers by placing in their hands over \$1,000,000.

The Centennial Exposition of 1888 has been to the Queen City what the Centennial of 1876 was to Philadelphia; and, for years to come, Cincinnati will be benefitted by this great enterprise. Aside from a financial view of the matter, "The Centennial has placed a brilliant gem in the crown of the Queen City, outshining any other jewel furnished by the events of a century of progress."

And for the fifteen men who early and late for two years toiled that Cincinnati might enjoy one of the greatest exhibitions that the world ever saw, there can be nothing but praise. Their only pay is honor and reputation for the work they have performed. They were compelled to sacrifice their business and give their time and money free of charge in order that the great enterprise might be made a success. They are patriots entitled to be enrolled among those who have contributed much to Cincinnati's glory. The representatives of our Institute were especially honored, the President and Chairman of the most important committees being selected from them. All honor to them. The following report of the Commissioners from the Institute speaks for itself:

CINCINNATI, OHIO, Nov. 23, 1888.

To the Honorable Board of Directors of the Ohio Mechanics' Institute:

We have the honor to report that the Centennial Exposition of the Ohio Valley and Central States, which was inaugurated on the 4th of July and closed November 8th, 1888, covering a period of 110 exhibiting days; the last ten days at the earnest solicitation of the Guarantors and at a reduced price of admission was conceded by the Commissioners. It having been originally designed to cover a period of only 100 days, to commemorate the Centennial Year. The Board of Commissioners composed of Representatives of the Cincinnati Chamber of Commerce, the Board of Trade, and our own honored Institute, have labored diligently for the past two years in devising ways and means, to give an Exposition in all its various departments, second to none ever held in this country, and upon a scale of magnificence commensurate with the important event to be celebrated, and showing the wonderful growth and development of our own city and the great Ohio Valley. Whether or not the important mission for which we were appointed has been fully and faithfully performed, the citizens, merchants and good people of this valley and territory must pass judgment.

The Board of Commissioners, while conscious of having used every effort to create enthusiasm and increase attendance, regret not having accomplished this most desired end, and feel not a little disappointment upon the consequent financial results and while an assessment of 35 per cent. has been levied upon the Guarantee Fund, the alacrity with which our people are responding and their expressed willingness to assume still further obligations gives evidence of the great good done the city and business interests and the indomitable pluck and energy of its citizens, who by their unprecedented liberality subscribed the munificent sum of \$1,000,000 and made the great Exposition just closed possible.

The Ohio Mechanics' Institute has been doubly honored in this great enterprise

and your representatives feel justly proud of the very great appreciation shown them by their fellow Commissioners, in having held the presiding office and the Chairmanships of several of the most important committees.

Respectfully submitted,

JAS. ALLISON,
A. B. CHAMPION,
G. A. GRAY,
P. G. MARCH,
L. H. MCCAMMON.

In the Sixty-Second Annual Report, (1890,) the statement is made that over one million of people visited this great Exposition.

To resume the general history of the Institute as set forth in the Annual Reports, the need of remodelling the building in order to retain and secure tenants, as the income from rents furnishes a large portion of the funds of the Institute, is stated in the Fifty-Seventh Annual Report (1885,) and an estimate of some twenty thousand dollars given as the probable cost of the needed rebuilding; to be met by an issue of low interest bonds on the building. The school is reported as successful and in the Department of Science and Arts the various sections, namely The Mechanical and Engineering sections, The Chemical section, and The Electrical section, are reported as in active operation.—In these activities it seems to resemble closely The Franklin Institute of Philadelphia.

The cost of the Popular Lectures having, for several seasons, largely exceeded the receipts, they were discontinued. The Library, and Reading room, were kept up in good condition and much frequented.

The Fifty-Eighth Annual Report, (1886,) records the effort made to increase the membership by the issue of a concise circular to the public; setting forth the history of the Institute, calling attention to the need of further development, and to the desirableness of opening an Industrial Training School.

The fact is announced that a debt of over seven thousand dollars had been incurred in completing a portion of the proposed remodelling of the building, and that further work had been suspended. The session of the Industrial and Art School, is reported as very successful, and the appointment announced of a committee to consider the founding of a Manual Training Department.

A communication to the Cincinnati Commercial Gazette was afterwards issued by the Committee as a Circular; from this, the following extracts are taken as an authorized showing of the Educational work of the Institute.

“THE OHIO MECHANICS INSTITUTE.

* * * * *

“This is, we believe, the only school of architectural and mechanical drawing in the city. Artistic drawing is also taught. It is not a drawing-school only, but a

real school of architectural and mechanical construction, with lectures and such special instruction as the aims require, employing a superintendent and fourteen teachers. These instructors, artists, architects, and mechanical engineers, are all men of ability—men who are successfully engaged in the daily practice of what they teach. Among them are graduates of universities of Eastern and European schools of technology, and several of them are well known through the original work they have executed.

"The school, now in its thirtieth year, is such a success that there is a demand for a higher and more extended course. And at the same time that other and still unsatisfied want—a manual training-school—demands of its directors an effort to extend its benevolent work. This requires an increased revenue, and to obtain it, they have determined to improve their building—to make three stories out of two very high ones (thirty-nine feet in the two), then rent out the first, second, and third, while the library, offices, school, and lecture-rooms would occupy the fourth and fifth. The great development of Vine Street shows that the property of the Institute is but half improved. Neighboring property brings a good rent, even in the fourth stories, while the Institute receives rent only from the ground floor. An increased rent is also obtainable by a change that will afford light and air to the rear of the stores.

"If the purposes of the Institute were commercial instead of benevolent, it would issue bonds for the money required, and proceed with the work. But it seems hardly proper that an institution of this kind should go in debt and incur business risks in order to obtain an increased revenue, which will not add to its wealth, as in the case of an individual, but which it must disburse in benefactions. The debt imposed in the erection of the building was an incubus for years.

"The instruction of those engaged in manual labor, in such branches of knowledge as relate to their work, not only increases the usefulness of the product, but as a necessary consequence promotes the happiness of those employed. Machinery and goods of superior design and make, take the market, and put the factories of clumsy competitors on short time. While the drawing-school and class-room part of this instruction, as applied to many trades, is being given by the Ohio Mechanics' Institute, the manual training-school part of the instruction is still to be supplied. Something has been done by the liberality of a few for the instruction of children in useful work, but for the industrial education of larger boys nothing has been attempted. There are hundreds of boys who would learn trades if they could, but they are debarred by the rules of the unions. To all such, the manual training-school would be a boon. In Europe, such schools are being established everywhere, and there are many in the United States, but our ranks are not yet formed. In this, the industrial world is leaving us behind.

"The real benefactor in construction and manufacture, is he who determines what is required, how much of it, and the form and manner of its use. He avoids the chances and imperfections of uncertain modes. The encumbered processes through which ignorant precaution gropes, and the dangerous risks it takes unknowingly, hamper the result no longer. He applies the exact methods of science, and improves and cheapens all the products that supply the needs of life. Shall we have the school?"

In connection with this movement certain changes in the charter were thought desirable so as to authorize the election of Trustees for terms of years, instead of annually; in order to avoid too sudden changes of plans, etc.; and to effect this State Legislation was secured.

The following tribute to the late Miles Greenwood, one of the oldest members of the Institute, who had died during the year, is given as a part of the history of the Institute.

THE LATE MILES GREENWOOD.

On Nov. 7th, 1885, we all learned with feelings of sorrow, of the death of Miles Greenwood, who was, without doubt, the greatest friend the Institute ever had. A meeting was immediately called, and the following expressions were unanimously adopted:

"It seems but a little while since one of our prominent members died, and we had occasion to say that the men who contributed to endow the Ohio Mechanics' Institute with a fixed abode, were passing away, and now Miles Greenwood, its chief benefactor, and the man who in this, inspired all the rest, has gone to his long home.

"Many of us remember his zeal in this work, how for weeks he went from factory and shop, and store, office and bank, calling upon the people to rescue the homeless Institute, and give it a building in which it might remain. To all this personal service he added a large and generous gift. The history of the Institute records the gratitude of the members. He was annually elected to the chief office as long as he would accept, and on the 16th of December, 1856, he was elected an emeritus trustee and advisory director for life. At the same time that he was active in our behalf, he was engaged in an effort that resulted in giving our city a paid steam fire department. We also mention in his honor the personal attention that he gave to the building of the Southern Railroad.

"But the members of the Ohio Mechanics' Institute remember him best as a friend, when friends were few, as one who came to assist those who had been paying the rent out of their own pockets, as the man who, in the morning sowed the seed of our prosperity, and in the evening withheld not his hand. That seed produced a harvest, and has provided mental food for thousands of young mechanics, and they and those who follow them, will cherish the lesson of his useful life, and hold his name in grateful remembrance long after time shall have erased it from the iron columns and the countless articles of domestic use that his factories have made.

"We mourn his loss, and sympathize with his devoted wife and family, to whom this sorrow comes while she is prostrated by physical suffering.

"We request that the members of the Institute attend the funeral, and that a copy of this action be sent to the family."

The Fifty-Ninth Annual Report, (April, 1887,) records no progress as yet towards the opening of a Manual Training School, but reports the Industrial and Art School as very successful.

The resignation of Mr. John B. Heich is announced as follows:

RESIGNATION OF MR. JOHN B. HEICH.

At our regular meeting in January, Mr. John B. Heich tendered his resignation as clerk. It was accepted with regret, and a committee appointed to prepare a resolution expressing the feeling of the Board.

The committee presented the following, which was unanimously adopted:

The Ohio Mechanics' Institute, of Cincinnati, Ohio, existing for more than half a century, supporting a school of design, for the purpose of giving free education to mechanics and artisans in the higher branches of their trade, with graduates in all parts of the country and in all branches where skilled and educated labor is required, speaking for itself through its Directors and for its graduates, give to John B. Heich, Esq., Assistant Secretary for thirty-one years, and Superintendent of its schools for like period, regretful but pleasant words at parting, and cheery hopes for his future wherever he may go.

Secretary Heich for all these years has been constant in his fidelity, untiring and careful in his labors, always inspiring courage and hopefulness, and contributing to success by his industry.

stairways, hall on second floor, ceiling and walls of library, cleaning ceiling and painting walls of Greenwood Hall, enlarging office, painting and papering same, changing entrance to room west of office, and painting and papering it. To carry out our contract with the Builders' Exchange, which now occupies the south-east room in second story of the Institute, changes and improvements were made involving an expenditure of some thirteen hundred dollars. On account of the increased number of scholars, and insufficient light in the school rooms, it was necessary to enlarge the pipes conducting the gas into the building and otherwise changing the service. Taking into consideration the amounts expended for above items and which may be classed as extraordinary expenses, the ordinary expenses of the year have been very reasonable and compare favorably with former years.

DAY WILL TRUST FUND.

The report of Hugh McCollum, Treasurer, will show you in detail the manner in which this fund is invested, and which now amounts to \$8,108.71. It is well and safely invested and is increasing each year. As you are aware, it can not, under the conditions of the will, be used at present.

This, our sixtieth year, and the Centennial of our city, finds the Institute in a most prosperous condition, and only those who can look back through all these years, and know by personal experience of the difficulties overcome to bring the Ohio Mechanics Institute to its present standard, are able to appreciate the deep interest it has for us.

Trusting that each succeeding anniversary may be as bright as the present, this report, on behalf of the Board of Directors is respectfully submitted.

THOMAS GILPIN,

President.

WM. H. STEWART,

Secretary.

The report of the Board of Directors for the ensuing year 1889, shows continuing progress and prosperity. They say:

It has been sixty-one years since the Ohio Mechanics' Institute was organized and each year as it passes away, is but a crown of laurel to the noble men, who in 1828, laid the foundation of that, which it has been our pleasant duty to nurture and care for during the past twelve months.

The few honored members who are still with us and whose memory carries them back more than half a century, can realize that the Incorporators of this Institute builded better than they knew, and now that we are on a firm foundation, and it is within our province and our means, to each year educate in the Mechanic Arts over five hundred youths and young men, we can but revere the memory of those who have gone before us, those to whom the citizens of Cincinnati owe so much, for to this Institute are they indebted for their Industrial Expositions, their Art Museum, and other enterprises which add to the fame and glory of the Queen City.

These men have passed away, but they are not dead—for "to live in the hearts they left behind, is not to die."

MEMBERSHIP.

There has been but slight change in our membership and though a few have dropped out the new members admitted brings the number up to that of a year ago.

Since our last Annual Report five of our life members have crossed the low lands to dwell on the mountain top.

The names of the members who have died during the year always appear on a page of the annual report, enclosed in a black border,

with some words of appreciation ; suggesting that membership in this Institute, means something more than a mere formal association of people indifferent to each other ; that this, like the Maryland Institute, is an association of friends animated by a common purpose and linked together by close personal interests. This feature, common to these Mechanics Associations in the different cities, goes far towards explaining their success. It is by virtue of the strong personal coöperation of their members that they have come to have such power for good in their several communities.

Of the school they say :

INDUSTRIAL AND ART SCHOOL.

The thirty-third session of the school commenced October 16, 1888, and ended March 15, 1889. The number of scholars enrolled was five hundred and six (506) an increase over all previous sessions of the school.

Many of our members do not appreciate or realize the great good being done in this Department of the Institute. The work of the scholars, a portion of which will be shown at the annual meeting, will be a convincing proof, that teachers and scholars have been most industrious during the past winter and that the thanks of the Institute are due to the worthy gentlemen, the teachers of the Industrial and Art School, for the session of 1888-89.

For detailed information in relation to this Department we refer you to the report of Mr. R. E. Champion, Superintendent.

LIBRARY AND READING ROOM.

The number of readers has largely increased during the past year, (the average number during autumn and winter being some 700 per month) and additions have been made to the reading matter to be found on our tables.

Several pages are given to the list of the series of Expositions held under the direction of the Institute. The passages relating to the Centennial Exposition has already been here given.

Of the financial condition they say: "We are out of debt, have a small cash balance and two thousand dollars invested in bonds." They recite various sundry expenses and among them the following item of interest: "Assessment on Guarantee Fund, Centennial Exposition \$3,500." This report is signed by Thomas Gilpin, President and Wm. H. Stewart, Jr., Secretary.

In the Sixty-Second Annual Report, (April 1890,) the Directors thus speak of the school and its prosperity.

It has been our constant aim and desire to carry out effectually your wishes in the promotion of the best interests of the Institute and objects of its founders; namely: To facilitate the diffusion of useful knowledge in the maintenance of a school of instruction for young mechanics in drawing and such sciences as will impart intelligent skill in practice of the useful arts to the extent of our ability.

We have endeavored faithfully to carry out this important trust, and we have very great satisfaction in submitting for your careful consideration the very flattering and encouraging reports of the various departments.

Never in the history of our school work has greater evidence been manifest by

pupils and teachers alike of a desire to take advantage of the opportunities afforded them, as shown by the constant increase in number of pupils and high grade of work produced.

Your Board of Directors desire to express through the membership their eminent satisfaction and appreciation of the untiring efforts of the superintendent and instructors for these good results, and for their diligence, patience and painstaking care; and to the students words of highest praise for their persevering energy.

Their meritorious work reflects great credit and is the best evidence they can offer of the interest they have taken in endeavoring to better fit themselves for the daily avocations of life.

* * * * *

INDUSTRIAL AND ART SCHOOL.

The thirty-fourth session of the school ended March 14, 1890. The number of scholars enrolled was 547, being a large increase over all previous sessions. The increase in the number of scholars and the excellent work accomplished by them is most gratifying, and is an evidence that the school and the benefits to be derived from it are fully appreciated by the young mechanics and others in Cincinnati and vicinity. The discipline of the school is most perfect and, in consequence, the work of the scholars surpasses that of former years.

An increase is noted in the number of readers using the Library, who are said to have averaged eleven hundred a month. The announcement is made of the decease of the President, and the following tribute to him occupies two pages of the report.

IN MEMORIAM.

THOMAS GILPIN,

President Ohio Mechanics' Institute.

DIED OCTOBER 26, 1889.

Those of us who met our beloved President Thomas Gilpin in the past two years, could not fail to realize that, though he declared his determination to get well, he buoyed himself with hopes, impressed his cheerfulness on others, the end of all was gradually but surely approaching and that his days were numbered and few; so that when he was yet living, one of us, guiding this Institute with faithful hand, we spoke of him as though he were gone, and in the kindly words it is noble yet usual custom to speak of the dead, it was said: "He was a patient, unselfish, and public-spirited man; he was an honest man and a devoted and true friend," and now that he sleeps peacefully beneath the green sod, under the blue skies and glittering stars, and his spirit has fled to Him who gave it, we can speak no more gently or kindly than we did while he yet lived, and we say now as we said then, that though not perfect, he possessed all manly and humane attributes, was a pure, conscientious and upright man and useful citizen, loved and admired by all who knew him, and most so by those who knew him best, for his gentle and quiet ways and retiring disposition would have kept him in the background had not his merit been so great as to make him at times conspicuous to, and his services demanded by, his fellow-citizens.

Thomas Gilpin was born in the city of Philadelphia, October 23rd, 1821. He emigrated to the city of Cincinnati in the year 1826 and soon entered the business of

wholesale grocer, and later became a wholesale lumber merchant, and continued, in spite of adversity, fire and flood, a prosperous and successful business man to the time of his death, and in spite of adverse circumstances acquired a competency.

Early in the history of that organization he became an Odd Fellow, and a tribute to his faithfulness is the fact that he was for twenty-nine years in succession elected treasurer and trustee of Washington Lodge No. 3, holding such positions at his death.

At various times he was a member of the City Council and Board of Education; was one of the Work House Board supervising the erection of the present buildings of that institution, and for many years was a trustee of the House of Refuge, here finding a field for his well-known humanitarianism and philanthropy.

March 12th, 1861, he became a member of the Ohio Mechanics' Institute; March 8th, 1864, was elected a director, and March 11th, 1873, was elected president, which position he was re-elected to seventeen times, thus serving continuously for nearly eighteen years and until his death. He believed in the usefulness of the Institute, in its power for good and its need in this great city; he gave its affairs zealous, painstaking and continual attention, and lived to see it, at the end of his life, greater, more successful and prosperous than ever before in its history.

As representative of this Institute he served as commissioner of the first, second, third, fourth, fifth, sixth, seventh and ninth expositions, of three of them vice-president, and of three treasurer.

Through all the years of his stewardship he daily saw that the Mechanics' Institute was advanced, and when he apprehended it was in danger or was not progressing as favorable as he desired, he gave it constant thought and attention. In its present thriving condition it stands a monument to him which shall endure when years shall have flown and as long as the city exists.

His last appearance with us was at the annual exercises in April, 1888, but ere they closed he had to return to his home, and from that time to his death, through heart disease, he was too feeble in body to attend our meetings, but from his sick-room he still guided with unswerving care.

On the afternoon of Saturday, October 26th, 1889, he laid down to rest and sleep, and when called it was found that his sleep was the eternal one, and thus, peacefully and calmly as an infant sleeps, his pure soul went its way. "Like a shadow thrown softly and sweetly from a passing cloud, Death came upon him."

Though always among us, and of us, death is ever a complete stranger and his coming unexpected, and when we found that our President had so suddenly gone home, though his departure was not unanticipated, we felt the shock of a sudden calamity. We know that Thomas Gilpin was ever prepared with a clear conscience and clear character for the hereafter. We are grateful the end came to him so peacefully and painlessly, and thankful so pure a man was permitted to live, a blessing to everyone with whom he was associated.

The finances are represented as satisfactory, not a dollar of debt owed, bonds and cash on hand in the treasury. The building in good repair and the income ample to pay the expenses of the school and all ordinary expenses of the Institute. This report is signed by James Allison, Vice-President, and Frank S. Rohan, Secretary.

The Sixty-Third Annual Report,* the latest yet issued; shows an innovation, in that the Report of the Directors is preceded by the following report of the President, here given in full.

*Ohio Mechanics' Institute of the City of Cincinnati. "We live for those who need us, for the good that we can do." Sixty-Third Annual Report of the Board of Directors. From April, 1890, to April, 1891. Cincinnati. Published by the Ohio Mechanics' Institute. 1891 Digitized by Microsoft®

PRESIDENT'S REPORT.

To the Members of the Ohio Mechanics' Institute:

GENTLEMEN: Herewith submitted you will please find report of the Board of Directors for the current year 1890, being the Sixty-Third Annual Report submitted since the founding of the Institute in the year 1828, since which time the work has been growing with increasing interest each succeeding year.

As stated in former reports, and emphasized in this, much is due to the vigilance of the Superintendent and the untiring efforts of the teachers in the various departments for the unqualified success of our school work.

Never in the history of the Institute has such marked development among the pupils been manifest, as in the year just closed.

Seven hundred and twenty pupils were enrolled, the number far exceeding our expectations. This great increase caused us, in preparing to receive and care for them, much inconvenience, but all who applied for admission were received and provided with ample accommodations. To accomplish this end the directors were compelled to give up their meeting room, which was cheerfully done, the teachers also pleasantly submitting to the extra tax imposed upon their time and patience, so that none might be turned away.

The very best evidence of appreciation, on the part of the pupils in return, has been their anxiety to first enroll themselves and a desire to advance in their various studies. Their conduct and deportment has been most excellent, and the character of their work far above the average, as shown in examples of their drawing, etc., exhibited for your inspection.

For our own information, as well as for the members and friends of the Institute, the Board thought it expedient to canvass the pupils for information concerning their various trades or callings, and have the pleasure of presenting to you, elsewhere in this report, the result thereof; showing, we think, one of the most remarkable tables in the history of similar school work, in the great diversity of occupations in which our pupils are engaged.

The thanks of the Directors and members of the Institute, are due to the Superintendent and teachers, and to the Committee on Industrial and Art School, for their untiring and zealous efforts.

The meetings of the Board have been well attended, and I desire to personally thank the members, especially those whose locks are whitening by advancing years, and upon whom, as the years roll around, the inevitable marks of long time service is becoming more and more visible, but whose interest in the affairs of the Institute seemingly increase in comparison, as evidenced by their presence at our quarterly meetings in numbers exceeding those who should be more active. Surely this should be an incentive to the more youthful members.

We have had many reminders during the year just passed of the uncertainty of life. Seven honored members of the Institute have been called to their home beyond—many of them ripened in years, having passed the allotted time, others in the prime of manhood have succumbed to the Master's will—all honored citizens and their loss will be deeply felt in this community, and it can be truthfully said of them that the world is better for their having lived.

The affairs of the Ohio Mechanics' Institute are growing in importance year by year, and the demands upon its management increasing in interest, and no effort should be spared to further advance its usefulness.

Let us not weary in well doing, but strive in every way to fulfill the trust imposed upon us.

THE WORLD'S COLUMBIAN EXHIBITION TO BE HELD IN CHICAGO IN 1893.

I would call your attention to an act of Congress approved April 25th, 1890, providing for celebrating the four hundredth anniversary of the discovery of America by Christopher Columbus, by holding an international exhibition of arts, indus-

tries, manufactures, and the products of the soil, mine and sea, in the city of Chicago. And it has been suggested by the Commissioner of the Bureau of Education at Washington, that all educational interests be represented in the World's Columbian Exposition to be held in the former city in 1893, and calling upon all those interested to participate.

And would suggest that the Ohio Mechanics' Institute co-operate with other similar institutions and schools in this good work. And in order that we may be fully prepared, that these facts be made known to the members, teachers and pupils of our Industrial and Art School, so that they may at once be stimulated with a desire to participate in such manner as would reflect credit upon themselves and the Institute.

Further, that the Ohio Mechanics' Institute, within whose walls was first projected the idea of expositions in this city and under whose auspices the seventeen held here from 1838 to 1869, were successfully carried out, and also, in connection with the representatives of the Chamber of Commerce and Board of Trade has taken a prominent part in the inauguration and management of the fourteen Cincinnati Industrial Expositions held from 1869 to 1888, the three organizations having for years contributed largely to the success of the business interests of the city and the dissemination of exposition lore throughout the country at large, will in the Columbian World's Fair be ready to join hands in all laudable efforts for its ultimate success; and in order that the manufacturing interests of our own city shall be properly represented a committee of five commissioners have been appointed to co-operate with similar committees from the Chamber of Commerce and Board of Trade, to take such steps as may be deemed expedient in this direction.

I am not unmindful of the importance of exposition work in our own city, and am decidedly of the opinion that the interest in these enterprises should be maintained, as there is nothing that could be suggested from an educational or commercial standpoint that will tend more to the welfare of the city and pleasure to the visitor than in an exhibition of our mechanical industries. And while it may be said that the interest in such work is not as great as it once was, and does not pay, owing to the increasing similarity of such exhibitions in adjacent cities is a grave mistake, and the very best argument in favor of their continuation. If we would keep up with the times we must move and advertise that which we have to dispose of, and Cincinnati can not well afford to be indifferent with the magnificent line of manufactures produced here and which find a ready market the world over. An exhibition of the latest improved machinery of all kinds, as turned out from our manufacturing, would in itself make a wonderfully interesting and instructive exhibition; add to this the furniture and carriage interests, either of which would prove alike interesting, and you have that which should stimulate a desire and afford ample opportunity for at least semi-annual expositions.

In conclusion, all those who are familiar with the early struggles of the few faithful men, who by their indomitable will and persistent efforts made it possible far beyond their own hopes or the most sanguine expectations of their friends fostered and reared the Ohio Mechanics' Institute know what a Herculean task they had before them. Happily a few of them whitened by the ever encroaching hand of time have been spared to witness and rejoice with us in the prosperity of the Institute, a justly merited reward for labor well done and services faithfully performed in the building up of the grand institution of to-day, firmly established and permanently located in a property free from all incumbrances quietly and unobtrusively fulfilling the mission of its founders, namely: "To facilitate the diffusion of useful knowledge in the maintenance of a school or institution for young mechanics in drawing and such sciences as will impart intelligent skill in practice of the useful arts to the extent of our ability."

The attention of members and friends of the Institute is especially directed to the clause in the will of the late Hon. Timothy C. Day, referring to young mechanics,

and to be found elsewhere in this report, and it is my special desire that if the members or friends of the Institute have knowledge of any worthy young man who would wish to avail himself of this beneficent privilege, they will confer a favor upon the Board of Trustees by advising them of the names of such, so that proper investigation may be made.

In continuation of this good work and with this end in view the present Board of Directors, following in the footsteps of their predecessors, have refrained from forming any alliance with other schools or the acceptance of kindly proffers that have been made by some of our citizens for this purpose, preferring to pursue a course which the experience of many years has practically demonstrated is best calculated to promote the very best interests of a class that is afforded no such opportunities in any other school in our city or state. As evidence of this fact we point with no small degree of pride to the constantly increasing numbers and the splendid results attained by the young mechanics and others who have availed themselves of our school privileges.

Like many other public and beneficent institutions in our city, the great good accomplished by the Ohio Mechanics' Institute does not seem to be fully understood or appreciated by the majority of our citizens. Absorbed in the busy cares of commercial life they are prone to forget that their influence means more than a passing notice, voluntary subscription or good will, their presence in an occasional visit to the school would aid in stimulating pupils and teachers alike in their work, encouraging the directors or managers and contribute largely to their own pleasure in a knowledge of what is being done for the young mechanics and for the cause of education, morality, good citizenship, and sound government, which is or should be our first thought and the underlying basis of all our work. You will always be made welcome at the Ohio Mechanics' Institute.

JAMES ALLISON,
President.

The report by the Directors, gives as usual a list of the journals and periodicals in the Reading Room, and a list, also, of donations made of journals and reading matter; extracts from the report of the Committee on the "Day Will Trust Fund," are also given. This fund arises under the Will of the late Hon. Timothy C. Day, of Cincinnati, who left one third of his estate to each of these institutions of the City; The Young Men's Mercantile Library, The Cincinnati Orphan Asylum, and the Ohio Mechanics' Institute. The latter has already received between ten and eleven thousand dollars from this legacy. This report closes as follows:

IMPROVEMENTS AND REPAIRS.

During the current year many improvements have been made in the interior of the building.

The front and storm doors, hallways, first, second and third stories, four dressing and cloak rooms and Greenwood Hall have been cleaned, painted and varnished and a portion of the floor in Greenwood Hall relaid. Ceilings and walls in school rooms and upper hallways were cleaned and whitened.

Gas fixtures and heaters in entire building were painted and bronzed, and roof of building repaired.

Office was papered and carpeted and carpet was laid in room devoted to our female pupils.

Desks to accommodate sixty-six pupils were put in school rooms; six dozen stools were purchased for use of the scholars and rubber tips put on three hundred and fifty stools in school rooms.

Additional electric lamps were purchased, making one hundred and twenty-nine now in use. New folding opera-chairs were purchased for Greenwood Hall, and the entire interior of the building is bright, clean and attractive. The exterior of building should be painted, roof and gutters repaired and painted as soon as our means will justify the expenditure necessary.

FINANCES.

Financially the Institute is free from debt. Our income is sufficient for all current expenses, and during the year we were able to invest \$3,000 in bonds, which in due time we hope to apply to an extension of our school work.

The reports of Treasurer and Clerk will show, in detail, our receipts and expenditures.

Sixty-three years have passed since the founders of this Institute, in an humble, modest way, prepared an avenue through which the youth of this city and vicinity might travel in the pursuit of knowledge and education in the material and practical solution of the problem of life. Our Industrial and Art School is their monument.

We honor these noble benefactors who, in its infancy, fostered and encouraged it.

With best wishes for the continued prosperity of the Institute, this report is, on behalf of the Board of Directors, respectfully submitted.

JAMES ALLISON,

President.

FRANK S. ROHAN,

Secretary.

The reports of the Principal of the School will be found in the account of the School which follows:

The financial statement, and the list of officers and committees for the current year which follow, close the account proper of the Institute.

Clerk's Financial Report, Ohio Mechanics' Institute, from April 1, 1890, to April 1, 1891.

Receipts.	Dr.	Disbursements.	Cr.
Balance in hands of Treasurer, April 1, 1890.....	\$2,061.46	Paid Salaries of Clerk and Librarian.....	\$2,040.00
Received from Rents.....	9,832.00	“ “ “ Janitor and Engineer.....	1,140.00
“ “ Industrial and Art School.....	2,116.00	“ “ “ Industrial and Art School.....	1,463.00
“ “ Dues.....	204.00	“ “ for Repairs.....	863.79
“ “ Membership.....	51.00	“ “ Improvements.....	765.75
“ “ Interest on Investments.....	180.00	“ “ Gas and Electric Light.....	729.05
“ “ Sale of old chairs, etc.....	12.30	“ “ Water Rent.....	37.84
		“ “ Books, Newspapers, Periodicals and Binding.....	465.15
		“ “ Advertising.....	185.68
		“ “ Printing Reports, Circulars, Notices, etc.....	214.00
		“ “ Taxes.....	1,199.38
		“ “ Fuel.....	235.51
		“ “ Insurance.....	50.00
		“ “ Awards, Diplomas, Frames Copies and Studies for School.....	514.69
		“ “ Cincinnati four per cent. Bonds.....	3,000.00
		“ “ Premium and Accrued Interest on same.....	222.60
		“ “ Donation to Society of American Engineers.....	25.00
		Cash in hands of Treasurer, April 1, 1891.....	975.32
Total.....	\$13,956.76	Total.....	\$13,956.76

Respectfully submitted,

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R. E. CHAMPION,
Clerk.

OHIO MECHANICS' INSTITUTE, CINCINNATI, OHIO.

[Constitution adopted November 29, 1828. Incorporated February 9, 1829.]

OFFICERS FOR 1890-91.

President, JAMES ALLISON, 122 Main Street.*Vice-President*, JOHN W. DALE, 65 West Fourth Street.*Secretary*, FRANK S. ROHAN, 372 Elm Street.*Treasurer*, HUGH MCCOLLUM, 53 West Ninth Street.

DIRECTORS.

A. B. Champion, 75 West Third Street; Chas. L. Wiltsee, 146 Carlisle Avenue; Lawrence Grace, 12 Coleman Street; Walter Laidlaw, S. E. Cor. Plum and Pearl; Robert Kirkup, 60 Lodge Street; William Griffith, Hunt and Abigail Streets; James Leslie, 278 West Seventh Street; R. E. Champion, Clerk.

Regular meeting of the Board of Directors: First Tuesday of each month.

STANDING COMMITTEES, 1890-91.

Executive.—President, Secretary, Treasurer.*Finance*.—Dale, Griffith, Wiltsee.*Property*.—McCollum, Laidlaw, Griffith.*Industrial and Art School*.—Laidlaw, Champion, Leslie.*Library and Reading Room*.—Rohan, Grace, Kirkup.*Lectures and Institute Meetings*.—Grace, Kirkup, Wiltsee.*Reference and Membership*.—Champion, Leslie, Grace.*Day Will Trust Fund*.—Dale, Champion, McCollum.*Commissioners Cincinnati Industrial Exposition*.—Allison, McCammon, Champion, Gray, March.

THE SCHOOL OF DESIGN.*

In the autumn of 1856, evening drawing classes were organized by the Institute, open on two evenings in the week, under the general direction of the standing Committee of Trustees, "on School of Design and Classes," with the clerk of the Board of Directors, Mr. John Heich, as Principal. The number of teachers employed varies of course with the attendance.

A letter received in May 1882, from Mr. Heich, by the author of this Report, contains the remarkable statement that during all the twenty six years succeeding that first opening, he has been absent but three evenings from the sessions of the school!—The sessions continue four months; during the first session 52 pupils attended. There being no limit as to age many adult mechanics who wished to improve in drawing, came regularly; and men of fifty were seen busily drawing along side of boys of fifteen.

*The statements in regard to the earlier years of this school are found in the volume entitled, "Fiftieth Anniversary of the Ohio Mechanics' Institute, November 20th, 1878,—(1828, 1878). Historical Sketch, prepared and published by order of the Institute, Cincinnati, 1878." 8vo. Pp. 90.

The second session saw a large increase in attendance.

"The Board, in speaking of the work of the year, say that they have endeavored to aid the intellectual part of the Institute as far as possible by the continuance of the School of Design and the organization of a series of lectures, scientific and popular.

They said :

"The School of Design has been attended with great success, the attendance thereon being 107. Each and all evinced earnest attention, accompanied with a very commendable degree of proficiency in the various classes in which the school was divided. The benefits resulting from the establishment of this department are so great that they must be obvious to all; for, as will be readily acceded, the principles of design are the fundamental elements of all mechanical vocations, and he, who has a practical knowledge thereof is enabled to understand the elements upon which all are based, and to realize and develop the higher and more valuable details connected therewith, as tending to thorough perfection of the mechanical and artistic pursuits."

The following extract from the report of the Principal for that year, shows that the importance of the study of Drawing, because of its direct influence upon manufactures, was fully realized and was urged upon the people of Cincinnati. Mr. Heich, in his report, quoted largely from the published addresses of Mr. Minifie, at that time the accomplished principal of the School of Design of the Maryland Institute, in Baltimore, which extracts will be found in this Report under the account of that School.*

"It may not be out of place to insert a few extracts from the report of the Principal of the School of Design for that year, as illustrating its importance to the industrial pursuits of the city:

"It is exceedingly gratifying to know that the number of students has increased over twice that of the preceding year, a fact that clearly shows that the art of drawing and design is beginning to be more appreciated by the inhabitants of Cincinnati than at any time formerly, and it is believed that its practical results will be felt by the community at an early day.

"A subject that has particularly claimed the attention of visitors has been the marked attention that appeared to be manifest in the pupils for advancement and improvement, which, with renewed and continued perseverance, must meet with signal success. It is believed, from the interest that has been evinced at the present session, that the young men of this city are awakened to the superior advantages to be obtained in life by a knowledge of this great art, and when this is generally understood, large numbers will avail themselves of the opportunity afforded of acquiring information that may be of the greatest importance in their different callings in life.

"The general advancement of the whole school has been most satisfactory, and the specimens emanating from the different classes, exhibit a wonderful degree of excellence and attention, and have elicited much praise.

RELATIONS OF DRAWING AND DESIGN TO THE INDUSTRIES OF A NATION.

"Here, gentlemen, permit me to dwell for a few moments upon the great importance of a knowledge of drawing and design, and show wherein the want of this all-important branch is felt, and the ways in which it may be rendered useful.

"First, it is one of the chief sources of national wealth; it is the foundation of nearly all the arts and manufactures; it is the leader of improvement, and the instrumentality of beauty and strength, for by its investigation and knowledge we

*See pages 33-34 and 124-130, Part I. of this Report.

ascertain where to put the strength to indicate beauty or true proportion. To its knowledge may be attributed the present state of the manufacturers, an evidence of which we behold in the daily walks of life. If this art is only cultivated to a greater extent (as it certainly will be when rightly appreciated), we shall manufacture much more than we do at present; this is now done by others who reap the profit to our disadvantage.

"A few statistics will make this evident at a glance. Let us look at our imports for the past year. We paid during that period to England for woolen goods, \$20,337,917; to France \$6,472,374. For cotton goods to England, \$21,207,214; to France, \$2,084,881. For silk goods to England, \$10,889,948; to France, \$16,407,476. For laces and embroideries to England, \$5,807,236; to France, \$1,681,845. For the single item of carpets, we paid England \$2,680,119. Is it right that such a state of affairs should exist in a nation whose axiom is Progress? we who produce the raw material, and sell to others for them to manufacture, and sell to us back again, why is it that it can not be manufactured here? The want of this art of design is one of the principal causes; England takes the lead of us, and France the lead of England in this respect. Think of it, the sum of \$84,849,891 paid England and France for articles on nearly all of which have more or less artistic labor and skill been expended for their ornamentation. We ought to have manufactured the greater part ourselves. In this examination only one branch of our importations has been brought forward, others might be adduced, though not to such a marked extent."

The school is regularly noticed in the annual Reports of the Trustees, but nothing of special interest occurs till the report of the Principal of the school for the season of 1861-62, from which the Trustees quote the following.

"The attendance upon the School of Design, as might be expected, was largely decreased. The Directors, at one time, had almost concluded not to open the School for this session.

The Principal, in his report for the first year of the war, said:

"The reasons for the large decline in attendance are well known to you all. A large portion of those who have attended for several years immediately enrolled themselves when their country called for volunteers. My attention at this time was particularly called to a number of pupils whose progress I had watched with deep interest for several years with a great deal of satisfaction, from their manifest desire to improve, but who, when their country called, nobly responded, and it is with pain that I now relate, that out of those who received prizes last year for progress, and proficiency, five are now sleeping that sleep from which they will never return, sealing a patriot's devotion with their blood. The attendance in a single year has fallen from 221 enrolled to only 70 pupils."

After the first two years of the war the attendance rapidly increased.

An extract from the Annual Report of March 1870, shows, indirectly, a general development in the City of interest in Art, and in the promotion of facilities for Art training, which has continued to make marked progress; the diminution of attendance because of the more general distribution of similar or better facilities, is a most favorable indication and a proof of good accomplished by the Institute.

"For the year commencing March, 1870, the Board state that the attendance in the School of Design has been slightly reduced for several years, and in explanation of the same we insert the following extract:

"The Board of Directors desire to call special attention to the successful results of

the practical workings of the School of Design. It has, in reality, proved itself the pioneer in the several branches which have been taught in its different departments. It has been, without doubt, the forerunner of the school in connection with the McMicken University, and the means of the introduction of drawing in the Public Schools of Cincinnati. The Board expect that the number in attendance in the general drawing department especially will be reduced from year to year hereafter, owing to the multiplied facilities that are now afforded. Upwards of ten thousand are now studying drawing in the public schools, many of whom are in their third year, and, of course, have attained considerable proficiency.

"The "Ohio Mechanics' Institute School of Design" has made its mark upon the manufacturing interests of the city, and has inaugurated the opportunities that exist for a knowledge of the several important branches that have attained such decided success during the many years of its organization."

The fiftieth anniversary of the Institute in 1878, found the School of Design, then in its 23d annual session and flourishing. It was organized in three departments 1st "Mechanical," For machinists, metal workers, pattern makers, founders, blacksmiths, etc.—This was in charge of Messrs Ernest Lietze, George Wadman, and Henry Jungst, and the succeeding report shows that 78 persons attended this class.

2nd. "Architectural," For carpenters, masons, wood workers, builders, etc.—Messrs. Edwin Anderson, and Theodore Richter, were in charge, and there was an attendance of 58, students.—

3d. "Artistic," For free hand drawing, perspective, crayon, etc.; for painters, plasterers, carvers, cabinet makers, etc. Messrs. M. Gindelin, and W. R. McComas, in charge.

There were also special classes. That in Original Designing, for instruction in designing as practically applied to the manufacture of furniture, jewelry, silver ware, ornamental iron work, wall and ceiling decoration, carpets, lace and damask hangings, etc., was also in charge of Messrs Gindelin and McComas, and a total of 54 pupils are reported in the artistic department and this special class.

A class in Modelling in Clay, as applied in the several branches of Industrial Arts, was in charge of Mr. C. L. Fettweis, and attended by 9. pupils.

A class in Drawing from Life, was in charge of Mr. C. T. Webber, 21 pupils attended. There was a total enrolled attendance of 220 students.

These two last named classes show that considerable progress towards a knowledge of what was essential for complete training in Industrial Art had been made. No record of when the clay modelling class was established appears. The Life class was organized in 1877-8. Mr. Frank Duveneck, was in charge the first term.—

The Annual Report of the Board of Trustees, in 1879, quotes from the prospectus of the School as follows :

"The following extract from the prospectus of the school will illustrate some important changes in its management, viz :

"In order to increase the interest in the school, the Board of Directors have adopted a new system of awards for the recognition of merit, which it is believed

will be appreciated by the members, viz : The inauguration of a distribution of awards for the encouragement of a more continuous attendance, extending over a series of several years; which is highly important if the school is to attain the success desired by its founders.

"First Year's Attendance.—A bronze medal of the Institute will be awarded in each department, to be competed for by those during their first year's attendance.

"Second Year's Attendance.—A silver medal of the Institute will be awarded in each department, to be competed for by those during their second year's attendance.

"Third Year's Attendance.—A gold medal or badge of the Institute, of suitable design, will be awarded in each department, to be competed for by those during their third year's attendance.

"The above medals will be awarded, in view of the excellence attained, progress made, and regular and prompt attendance. A rigid comparison and examination will be made, on behalf of the Board of Directors, upon which the award will depend, previous to the Award Exhibition in March.

"Special Classes.—Special classes already formed, or that may be formed hereafter, will be duly recognized by appropriate awards from time to time, as may be recommended and approved by the Board.

"Certificates of Progress.—The usual certificates of progress will be awarded to the respective classes as heretofore.

"Consecutive Three Years' Attendance.—All members of the school attending three years consecutively, will be awarded an appropriate certificate attesting to the same. It is not necessary to attend continuously in one class or department, but to attend the school three consecutive sessions."

The school as a whole has been very successful. A renewed activity has been manifested in the art department, in the life class branch through the efforts of Mr. C. T. Webber, who has given it most diligent attention. The class in modelling in clay has received the accession of many beautiful models, received from the United States Government through the courtesy of the Hon. John Sherman, Secretary of the Treasury."

The report of the School for the summer of 1879-80, shows an increased attendance,—the total being 235,—the Modelling class increased from 9 to 19, and the Life class from 21 to 25. There were 42 students in the Architectural Department and 62 in the Artistic.

"The number enrolled in the mechanical department was much larger than at any previous sessions of the school, 87 members. Included in the whole number enrolled were nearly ninety over 21 years of age, with a number over 40 years of age. This alone would evince the great importance of the branches taught in the school to the requirements of the many artisans engaged in the industrial pursuits of this great manufacturing city."

Mr. C. T. Webber, was in charge of the Life Class in 1878-9, and 1879-80.

The report of 1881, gives a favorable statement of the continued prosperity of the School, there being an increase of 44 in the total number in attendance. Mr. F. A. Vintner, has succeeded Mr. Webber, in charge of the Life Class.

The Fifty-Fourth Annual Report of the Board of Directors (1882) records the following important change.

"In accordance with the recommendations of the previous Board of Directors, and as embodied in the following resolution adopted unanimously by them, a change has been made in the classification of the School, viz :

"Resolved, That the Life Class of the Ohio Mechanics' Institute having been

organized to extend the study of that branch of art, no opportunity having been adequately presented in the city for that purpose—it has had a very successful career since its organization, four years ago—the Committee in charge of the School of Design would now recommend to their successors that for the future said class be discontinued for the reasons that it has very successfully fulfilled the purpose for which it was originally organized and called into existence. It has been the means of calling into active operation several classes for the prosecution of this especial study; and, inasmuch as it is in a great measure out of the particular line of our tuition as specially applied to industrial art, we feel justified in recommending its discontinuance at this time by the Institute.

In lieu of the above class a new special class has been organized, viz: "Geometry and Mathematics as particularly applied to the industrial branches."

This Report, also, contains an important recognition of the fact that industrial drawing classes should lead directly to the establishment of technological institutions; in which complete training in the application of artistic knowledge to industries should be given.

This portion of the Report is here given, not only as an evidence of the healthy development of this institution; but as showing how directly the introduction of the study of drawing into the public schools of the United States, must inevitably influence development in all industries and manufactures.—The Institute had for years been trying to repair the omissions of the public school training; as soon the public schools of the city have fairly entered on this work, the result is seen in the impulse of the Institute to step forward to an advanced position.

TECHNOLOGICAL EDUCATION.

"The true function of the Institute is educational—"the diffusion of useful knowledge" being its fundamental purpose as declared in its Constitution. The question of methods, however, is one of great importance, dependent largely upon our resources and the highest needs of those who are to be the beneficiaries of the trust confided to us.

In the early days of the Institute the views of the founders partook of the village character of their surroundings, and extended but little beyond the establishment of a "lyceum," which should be, in a sense, a school for the members, most of whom, perhaps, had been deprived of the opportunity of early education. With a wisdom and foresight, however, which is worthy of all honor, they did not rest content with this, but, taking into consideration the interests of those who were to come after them, established permanent classes in mechanical, architectural and artistic drawing for the instruction of their sons and apprentices, which have ever since been continued as the "School of Design" of the Ohio Mechanics' Institute."

But conditions have now changed, and the growth of industrial schools elsewhere, and the ever-increasing demands of a higher education in the industrial arts, requires of us as trustees of an important trust the devotion of the resources at our command to the accomplishment of the fundamental purposes of the Institute in a manner recognized by modern thought and experience as the best for such purpose; and this, we have long been satisfied, is through the instrumentality of a School of Technology, where the study of scientific principles can be supplemented by instruction in the most approved methods, for their practical application in the industrial arts.

This, after all, is but the development, in a more complete form, of the germ

existing in our School of Design; and it may be realized by gradually extending its scope and adding to its apparatus as the increase of our resources permits. Rather than await the slow process of evolution on this basis, however, it has seemed to the Board within the range of possibility to accomplish the desired result sooner and on a far more liberal and effective scale by enlisting the co-operation of other organized institutions and the general public.

In this view Mr. L. M. Hosea, on behalf of the Board, in delivering the annual address, at the public exercises of March, 1880, to the graduating class and the assembled audience, called attention to the need of such schools, and their important bearing upon the industries of a nation, in the following terms:

IMPORTANCE TO THE NATION OF SCHOOLS OF TECHNICAL INDUSTRY.

“* * In the mechanic arts, and indeed in every department of busy practical life, the kind of training furnished by our industrial schools is of the highest importance both to the industrial worker and the country at large; not only to the individual, by enabling him to command better prices for his work, but especially to the nation whose artisans are skilled workmen, and whose productions secure prices in foreign markets and turn the balance of trade in its favor.

“The necessity for this special education was never so great in America as it is to-day. But a few years ago the United States contributed millions annually to the coffers of France and England in buying back as manufactured goods the very cotton our fields had grown; and in the form of machinery and cutlery the product of our ore banks. Why was this? It was because the skill of English artisans produced finer and cheaper cloth, built better machinery, and made better implements than we were capable of producing. It was because every manufacturing center of France had its industrial schools, maintained and protected by government, constantly educating her workmen in the arts of design; and, as a consequence, the civilized world poured riches into France in exchange for the silks and chintzes on which her educated artisans had bestowed their skill and cultivated taste.

“But now, the trade is changing. The fostering effect of our free institutions, which place the humblest workingman on an equal plane with the millionaire; the wise protection thrown by the national government around our struggling industries; and lastly, perhaps not least important, the elevating influence of our industrial training school;—these have worked a mighty change which is heard in the increasing hum of busy spindles and clank of iron arms once more saluting the rising sun over all this broad land.

“The superiority of American design and workmanship has steadily and surely compelled recognition against every obstacle. The whistle of our locomotives is heard in Russia, Germany, Cuba, Mexico, high up among the echoing peaks of the Andes, and amid the driving sands of Egyptian deserts. Those nations buy our locomotives not because the planing and lathe-work, the mere mechanical execution, is better than others, but because in general design, and capacity for usefulness under varying conditions, the American locomotive is superior to any in the world. Let this illustration suffice for all our manufactures, now, almost for the first time in history, on sale in foreign markets. Never until now has the American mechanic had a fair opportunity to show the world what he could do; and we have every reason to be proud of the result. We are to-day competing successfully in the markets of the world with older and wealthier nations because we are able to produce articles, implements, and machinery either better in quality, superior in artistic or mechanical design, or better adapted to the purpose of their construction than the products of our competitors; and this is directly attributable to the superior intelligence of our industrial classes. We make better wares because our artisans bring a higher intelligence to bear upon their work.

THE APPLICATIONS OF TECHNICAL TRAINING.

"Says Herbert Spencer: 'The engineer who misapplies his formulæ for strength of materials, builds a bridge which breaks down. The manufacturer whose machinery is badly devised can not compete with him whose machinery is well designed; and, as the ability of a nation to hold its own depends upon the skilled activity of its units, we see the bearing of such knowledge on the national fate.'

"But the tide has only begun to flow. The next quarter of a century is more than ever in the hands of our artisans, and she demands our best efforts. Success invites competition; our improved methods soon find imitators and our markets are cheapened * * * We can not hope to maintain a supremacy of this kind unless we improve faster than our competitors can follow. We must continue to improve our designs and better our manufactures. We can only do this by a closer study of the laws of nature and a more efficient and economical application of the power she gives us for our work."

The suggestions thus made seeming to meet with a responsive interest in the public mind, a formal resolution was unanimously adopted at the meeting of the Board of Directors, held April 6, 1880, as follows:

"Resolved, That a committee of three members of this Board be appointed to take into consideration and report the feasibility of establishing in connection with the 'Ohio Mechanics' Institute,' a School of Technology for imparting to youth practical instructions in the useful arts and applied sciences, and that they be authorized to confer with such committees as may be appointed for a similar purpose by other educational organizations, with a view of developing a comprehensive plan whereby joint action on the part of those interested may be secured."

L. M. Hosea, Chairman: Hugh McCollum, and Wm. H. Stewart, were appointed such committee.

The organization of the Department of Science and Arts, while not solely directed to this end, may be considered as a valuable auxiliary, and has strengthened the Institute in a direction which will enable it more efficiently to do its part in securing the ultimate establishment of the proposed Technological School. It has brought into the membership of the Institute a large number of prominent gentlemen, of recognized ability and standing, who are in full sympathy with the proposed movement, and able to render valuable assistance by their counsel and influence whenever the proper time arrives for action. This purpose was fully recognized at the outset.

The inaugural remarks of the chairman of the Department, referred to the subject in the following terms:

"Now a word as to the practical outcome of our association: Our city is earning a world-wide reputation as a center of aesthetic culture. Music and Art have taken up their abode among us, and public liberality has crowned us with a crown of jewels; but that which lies at the foundation of our pre-eminence has no organized means for its perpetuation. I refer to the underlying stratum on which all this is built—the Manufacturing Industries of Cincinnati. * * * There remains one need unanswered; a need which is inherent in the life of our city; and, could it be fully met, its accomplishment would rank with any of the great enterprises that public spirit and intelligent foresight have established in our midst. We need a great industrial school—an Institute of Technology—where our young men and women may be trained in the intelligent and practical application of the principles of science to the industrial arts.

"I believe it to be within our power, as members of the Mechanics' Institute, to accomplish this result, or, at least, to prepare the way and set in motion the forces that will lead to its accomplishment; and it seems to me peculiarly appropriate that the Institute should inaugurate the movement."

At the public exercises of March, 1881, the subject of a technological school was

again presented by Prof. F. W. Clarke, in delivering the annual address before a large audience.

It is highly probable that during the present year a definite plan for carrying out these desirable purposes will be developed. As an evidence of the awakening interest in the subject the fact may be mentioned that the Board of Trade of Cincinnati have recently adopted a resolution similar in its tenor to that adopted by us in 1880, and appointed a committee of conference as suggested in the resolution referred to."

The insertion of the Report of the Principal of the School of Design with the rules of the school, completes its history to the present time.

In its instruction in the Mechanical Department, it has done good work, and its Modelling and Life classes were decidedly progressive. In its Artistic Department, however, it for many years continued the use of flat copies, which are less and less in favor as a desirable method of art training.

The school, like similar institutions in other cities, has undoubtedly been of great service to this community; for it has long been a defect in our system of public education that any pupil who has been taught in the public schools, should be so untaught in the elementary training of hand and eye, as to be forced to avail himself of such late opportunities as are afforded by evening drawing classes.

REPORT OF THE SCHOOL OF DESIGN.

By the PRINCIPAL.

[Twenty-sixth Session. 1881, 1882.]

OFFICE OHIO MECHANICS' INSTITUTE,
Cincinnati, March 1, 1882.

"To the Board of Directors :

GENTLEMEN : In accordance with the duties devolving upon me, I take pleasure in submitting for your approval my report, showing the operations for the past (the Twenty-sixth) Session of the Ohio Mechanics' Institute School of Design.

The following statement will exhibit the number enrolled in each department during the session :

	Members.
First. Mechanical Department, more particularly for Machinists, Metal-workers, Pattern-makers, Founders, Blacksmiths, etc.....	117
Second. Architectural Department, more particularly for Carpenters, Joiners, Builders, Wood-workers, Masons, Bricklayers, etc.....	58
Third. Artistic Department, for Free Hand Drawing, Perspective, Crayon, etc., more particularly for Painters, Plasterers, Carvers, Gilders, Sculptors, including the study of Original Designing, for advanced pupils in Drawing; for Instruction in Designing, as applied to the Manufacture of Furniture, Jewelry, Silverware, Ornamental Iron Work, Wall and Ceiling Decoration, Carpets, Lace and Damask, Hangings, etc.....	78
Special Classes :	
Modelling in Clay, as applied in the several branches of Industrial Art..	12
Elementary Geometry and Mathematics, as applied to the Industrial Branches taught in the School.....	15
Total enrolled during the session.....	260

It will be noticed that the number enrolled is slightly larger than the previous session, indeed, no more can be accommodated with our present facilities.

It is exceedingly pleasing to note the large number enrolled in the Mechanical Department, which is more directly connected with our industrial and manufacturing branches. Of the number enrolled the past session more than one hundred were of the age of 20 or over, evincing, in a very marked degree, the importance and use of the school to the mechanics of the city.

The rules adopted by the Institute for the government of the school at previous sessions will be found attached to this report.

The school during the past session has been under the general supervision of myself in connection with the Committee in charge of this branch of the Institute, and the following instructors, viz:

1st. Mechanical Department, in charge of.....	{ Mr. Ernest Lietze, Mr. Geo. Wadman, Mr. Bert L. Baldwin.
2d. Architectural Department, in charge of.....	{ Mr. Wm. W. Franklin, Mr. W. S. Burrows.
3d. Artistic Department, in charge of.....	{ Mr. W. R. McComas. Mr. Albert J. Kaiser.
Original Designing, in charge of.....	{ Mr. W. R. McComas, Mr. Albert J. Kaiser.
Modelling in Clay, in charge of.....	Mr. C. L. Fettweis.
Geometry and Mathematics in charge of.....	Mr. Jas. B. Stanwood.

In the Report of the Board of Directors full mention will be found in the special provisions for the continuous attendance, as provided for in the system for the award of medals and premiums.

The specimens, showing the work of the several departments, have been on exhibition this evening, and I feel assured that the Board of Directors and members will be pleased at the excellence and progress made during the past session.

To those who may not think the display is as large and varied as the previous session, I deem it necessary to call their attention to the discontinuance of the class in Drawing from Life. Full information and reasons for same will be found in the action of the Board of Directors, reference to which may be found in the annual report.

The displays of the above class have certainly been very attractive at our annual exhibitions; but the great benefits attained by the members attending the class in Geometry and Mathematics must not be lost sight of when considered in connection with the varied branches of industry. It is true that no exhibit is made of their efficiency and progress this evening, but great good has certainly been accomplished.

Attached to this report is a list of those to whom medals and certificates have been awarded.

Respectfully submitted,

JOHN B. HEICH,
Principal.

SCHOOL OF DESIGN.

[Twenty-sixth session, 1881-82.]

INSTRUCTIONS TO TEACHERS.

1st. Each teacher will be required to be punctual and continuous in his attendance, and prepared to commence his instruction promptly at the tap of the bell, and give his entire attention to the pupils during each session of the school.

2d. A report must be made by the teacher to the Principal of the absence of any pupil, at each session, in a record book prepared for that purpose.

3d. They will see to the strict enforcement of all the rules for the government of the school and duly report any violation of the same.

4th. The teachers are expected to interest the pupils as far as possible, and encourage them to attend any lectures of instruction tendered them, and explain the great importance of a continuous attendance for several years.

5th. Those in the Mechanical and Architectural classes will explain to the members of their respective classes the fundamental laws of Mechanics and Architecture, with as much technical information as is possible, especially pertaining to the strength of materials, proportions, etc.

6th. The teachers in the Designing and Modelling classes will endeavor, as far as possible, to instruct their pupils in work which may have a practical character and bearing upon Industrial Art.

7th. Those in the Artistic Department will instruct their pupils in the free use of pencil, crayon, etc., advancing them with a studied course to the subject which they are endeavoring to obtain.

8th. The teachers in each department will examine all completed work, and see that it is placed in the care of the Principal until after the annual examination.

9th. The teachers are expected to have the pupils complete all their work in ample time for the examination by the Board of Directors, preparatory to the Annual Exhibition.

10th. They will carefully preserve all objects and studies, see that they are not carried from the building, unless by special consent, keeping a record of the same, and to whose charge they are conveyed.

11th. The Principal will keep a record of names, ages, occupations, attendance, etc., of members.

12th. The teachers will endeavor, as far as possible, to inculcate a knowledge of object drawing, in connection with the flat or copy system.

WALTER B. BRUCE,
WM. H. STEWART,
J. F. WALTON,

Committee on School of Design.

RULES.

The following Rules for the government of the School will be strictly enforced:

1st. The session will be held in the three upper Halls of the Institute, on the evenings of Tuesday and Friday of each week, from 7 to 9 o'clock.

2d. The pupils are desired to be present at the above hour, and at the sound of the tap bell to proceed immediately to the seats assigned them as quietly as possible; at the double tap of the bell the School will be dismissed, when it is expected that all will retire with due decorum from the Halls.

3d. Talking louder than a whisper, or noise of any kind, is positively prohibited. No pupil will be allowed to pass from one hall to another without the permission of a teacher.

4th. No visits to pupils will be permitted except by the consent of the teachers, or accompanied by the Board of Directors.

5th. The School will be visited, from time to time, by the Board of Directors, and the pupils will be required to place in care of the teachers, for examination, all completed drawings, properly marked with their names, until the close of the session; the drawings, however, remaining the property of the pupil, and may be removed after the Annual Exhibition. Unless this rule is strictly complied with the member will not be considered as competing for the awards.

6th. Specimens of proficiency will be required from every pupil at the close of

the session, as an example of his progress during the same. The prize medals and certificates will be awarded upon these according to merit, and they will be placed for review at the Annual Exhibition of the School in March.

7th. All pupils must provide themselves with the necessary materials for their instruction, including Drawing Books, Paper, Pencils, Crayons, Mathematical Instruments, Boards, etc., according to the particular requirements of the several Departments.

8th. It is sincerely hoped that every pupil will remain until the close of the session, both for individual interest and the success of the School; that he will be punctual in his attendance, and in no case retire without permission until the School is dismissed.

9th. At the commencement of a session, each pupil in the Mechanical and Architectural Departments will have a seat assigned him by number, which will secure its position until its close, unless changed by transfer. In the Artistic Department and Special Classes, the seats will be designated by the Teachers in charge of the same, as may be required from time to time by the classification.

10th. When the school is dismissed, the copies, etc., will be taken charge of by the teachers, but in no case will the pupils be allowed to take any from the rooms without permission of the Principal.

11th. The Principal shall, in case of gross violation of the rules, report the same to the Committee, who shall, if the conduct of the pupil or pupils deserve, expel him or them from the School.

By order of the Committee.

JOHN B. HEICH.

Principal.

The movement towards a further development of the various departments of the Institute and, more particularly, towards the introduction of technological instruction in connection with the drawing classes, already recorded;—continued to progress. The Fifty-Fifth Annual Report for the year 1882-83, records some important changes;—the use of the library and reading rooms were restricted to the members and the list of journals and periodicals were revised; the fifty selected were more strictly scientific and technical than formerly. The modification of the School of Design is thus recorded.

“SCHOOL OF TECHNOLOGY.

The School of Technology, formerly known as the School of Design, was organized during the past winter, by the adoption of the following resolution by the Board of Directors, viz:

“Resolved, that the School of Instruction, heretofore maintained by the Institute, and called the “School of Design,” be reorganized on the basis of systematic class instruction, in the principles of applied science and training in the Arts of Mechanical and Architectural Drawing and Modelling, and be known hereafter as the “School of Technology of the Ohio Mechanics’ Institute.”

The past session was the 27th in the history of the School. The Board of Directors, at the request of the Committee, continued the School as heretofore, for the session; in Mechanical, Architectural and Artistic Drawing, with special classes in Modelling, Geometry and Mathematics, and added a class in Elementary Mechanics

and Physics. The School was much larger than at any previous session, the total number enrolled being 415.

In addition to the above, and in connection with the School of Technology, the Lecture Committee of the Department of Science and Arts, conducted a course of Scientific Lectures involving the principles of applied Science, to which reference is made hereafter. The Members of the School were entitled to attend all lectures and the meetings of the Department of Science and Arts.

The usual plan for the awarding of premiums and certificates was continued, the system being, viz :

First Year's Attendance.—A bronze medal of the Institute will be awarded in each department, to be competed for by those during their first year's attendance.

Second Year's Attendance.—A silver medal of the Institute will be awarded in each department, to be competed for by those during their second year's attendance.

Third Year's Attendance.—A gold medal or badge of the Institute, of suitable design, will be awarded in each department, to be competed for by those during the third year's attendance.

The above medals will be awarded in view of the excellence attained and progress made. A rigid comparison and examination will be made on behalf of the Board of Directors, upon which the award will depend, previous to the Award Exhibition in March.

In accordance with the above, gold, silver, and bronze medals were awarded in the respective departments.

The Twenty-seventh Session was attended with marked success, and the work emanating from the school was of a high order and very praiseworthy on the part of the pupils executing them.

For further information in relation to the School we refer to the report of the Principal, hereunto attached.

TECHNOLOGICAL EDUCATION.

At the last Annual Meeting of the Members a special committee of five was appointed to consider the subject of Technological Education, upon a more systematic and extended plan than was carried out during the past winter, and indeed was possible with the present limited resources of the Institute. The Committee was directed to confer with similar delegates from other bodies interested in the movement. The Committees had numerous meetings, public and otherwise, and after much labor and thought submitted the following report to the Board of Directors, in order to be incorporated in the Annual Report for submission to the members."

"REPORT OF SPECIAL COMMITTEE ON TECHNOLOGICAL EDUCATION.

To the Honorable Board of Directors of the Ohio Mechanics' Institute :

GENTLEMEN: The committee appointed to consider the subject of a School of Technology, beg to report that they have met from time to time in consultation with the delegates appointed by the Board of Trade, University Board, and Board of Education as a joint committee in behalf of the organizations named; and that as the result of such consultation the sense of the joint committee is unanimously in favor of the establishment of such a school on a scale commensurate with the great public need; and to this end the delegates extend gratifying assurances of the co-operation of their constituent bodies. It is also the sense of the joint committee that the Ohio Mechanics' Institute is the natural and proper foundation for the proposed school, which is regarded as the legitimate outgrowth of the history and purposes of the Institute, and as its highest and best function.

In illustration of the views of the committee, the report of the Board of Trade delegates, made to their constituent Board on November 28, is here appended as ratified and adopted by the Board :

CINCINNATI, Nov. 28, 1882.

W. J. M. GORDON,

President Board of Trade and Transportation :

SIR : Your committee appointed to confer with similar committees from the Ohio Mechanics' Institute, Board of Education, and University Board, as to the advisability, etc., of a School of Technology for Cincinnati, beg leave to report that they have met in consultation on the subject, from time to time, with representatives of the various boards named. The important central position of this city as a producing and distributing center, the great volume of capital permanently invested in manufacturing enterprises, the large number of our citizens engaged in industrial pursuits, and the fact that our progress in the future seems to lie in this direction, all demand that the subject of technical education in science as practically applied to industry, should particularly interest the people of Cincinnati. Such schools are common in Europe, and are considered as essential to industrial progress and financial prosperity : they are becoming numerous in this country, and the fact that we are behind rival cities in this branch of enterprise, is an additional reason for immediate activity if we would hold our own as an important manufacturing center. We are happy to report that a general feeling in behalf of such work seems to animate this community; therefore, what seems most necessary at the present juncture is, to provide some plan by which a sentiment can be united in some one channel for practical, substantial education in the line most needed for young mechanics, for the great majority of our young people who are destined for mechanical pursuits, and for our young men whose lot it will be to manage manufacturing establishments; a school where the boy whose lot it is to become a blacksmith, a carpenter, a machinist, a locomotive engineer, or to follow any other manual trade may learn things in science and mechanics which will be of practical and real value to him in making his living, as well as a school where those who choose may reach for a higher range of scientific education. The Ohio Mechanics' Institute has for years been doing an excellent, though restricted work in this direction in its winter night school of design, and through its course of lectures under direction of its department of arts and sciences. The work has been done in a quiet, unostentatious way. The management, while conservative, has been clean and wholesome to the extent of its opportunities, and now affords a foundation to build on, which, in establishing a school of greater usefulness and breadth, will be of great value—the prestige of age, the character of the Institute and its organization, its recognized value in our exposition work, its accumulated capital and apparatus, are all so much accomplished to the end in view, and in any future movement should not be ignored. The sense of the joint committee from the various boards consulted seems to be that while a co-operation is practical on the part of the University and of the Board of Education, in arranging their respective courses of study, where necessary in conjunction with and in aid of a school of technology, yet the organization and the work being done by the Mechanics' Institute is the channel in which future effort should be united. The property of the Institute, while antiquated and of restricted value as it is (so far as revenue is concerned), occupies one of the best and most valuable business sites in the city, which if devoted to purely business uses would realize annually a handsome revenue. Power Hall Building, of the Exposition pile, can be utilized as a home for such a school, without interfering with the use of the buildings for their general purposes; the site is central, of easy access, the buildings are commodious and capable of being added to or rearranged for such work without extraordinary cost, and the use proposed is in direct keeping with the spirit of the principal donor of the build-

ings and that of his co-contributors to their erection. We have thus a home for such a school, an organization partially doing the work desired with property, apparatus, etc., of large value, already acquired, and it only remains for our citizens at large to supplement these advantages with financial and other encouragement to set on foot a school of technology in Cincinnati, of wide usefulness, on a scale creditable to the city and commensurate with her reputation in other matters of public spirit. The subject has engaged the attention of the Commercial Club of this city, a spirited and influential organization, in whose ranks an active and valuable interest has been awakened in the matter, promising important results. To arrive at the end desired, this general meeting has been called. A number of gentlemen interested and conversant with the subject are here, and have been invited to lay the matter at length before you. The co-operation of this Board, and of our citizens generally, is recommended in the way above indicated.

Respectfully submitted.

WM. L. ROBINSON,
JOHN S. WOODS,
GAZZAM GANO
Committee.

In the sentiments and recommendations of the Board of Trade your committee heartily concur, and would further state, that we believe it to be only necessary for this Board to give official recognition to the strong public desire expressed on all sides, and declare itself willing to accept, and faithfully and intelligently administer the enlarged trust, which such an undertaking would involve, in order to receive a large augmentation of its resources from public liberality.

You have already taken most important steps in this direction, which have received a cordial public approval, as evidences of an intelligent appreciation of the duties of the Institute, in promoting industrial education, and of its capacity to do more were the necessary means provided. The organization of your Department of Science and Arts, affording as it does an opportunity for men of intelligence and scientific attainments to co-operate in the dissemination of useful knowledge in practical directions; the publication of your Scientific Proceedings, affording an official medium of communication with other organized institutions, and with the public at large; the re-organization of your school under the distinctive name of a School of Technology, and upon the basis of systematic instruction in the principles of science practically applied; the establishment of a permanent weekly course of Scientific Lectures, free to your own members, and almost so to the public; all these are the gratifying fruits of a reawakened spirit of progress, and true development in the Institute of which you may feel justly proud, and which the public everywhere view with approval and congratulation.

We believe that the duty of the Institute lies in the direction indicated in the public sentiment already referred to and expressed in the Board of Trade report, and that we, as its Board of Directors, should put the Institute abreast of such public sentiment, and declare our willingness to advance as far and as rapidly as our means justify.

But apart from the expectation of increased funds from public liberality, your committee are of opinion that the present revenues of the Institute could be considerably enlarged by a change of base to the north wing of Exposition Buildings, provided a suitable lease could be obtained from the Trustees of Music Hall; and that our present School of Technology could be beneficially enlarged by such change, and the other work of the Institute carried on to better advantage.

Your committee therefore recommend the adoption of the following resolutions, in substance:

“*Resolved*, that the Board of Directors of the Ohio Mechanics' Institute recognize

the desirability of establishing in Cincinnati a School of Technology on a larger scale, and with more complete facilities for instruction than the means of the Institute have afforded hitherto, and that the establishment and maintenance of such a school are the appropriate functions of the Institute, as defined by the charter of its organization; and that the Institute will gladly avail itself of any augmentation of its resources to increase its facilities for education, and maintain a School of Technology, upon such scale of enlargement and completeness, as the increase of resources will permit."

"*Resolved*, that the matter of establishing such School of Technology, and of providing funds for the same be referred to a committee of three members of this board, to act in conjunction with committees from other boards, as requested by the Board of Trade."

"*Resolved*, that the Property Committee in connection with said School of Technology be instructed to ascertain and report to this Board: (1) the best terms of a lease obtainable from the Trustees of the Music Hall, for the occupancy of north wing of Exposition Buildings, for the purposes of the Ohio Mechanics' Institute, for the work now carried on, including an enlargement of the School of Technology, and the use of Power Hall for shop instruction, and the weekly use of Dexter Hall for lecture purposes; and (2) the best terms obtainable for the lease of the present Ohio Mechanics' Institute Building, for a term not exceeding 25 years.

Respectfully submitted,

L. M. HOSEA,
J. D. COX,
F. W. CLARKE."

The following extract from the report shows the general activity and development of the Institute.

"Previous to commencing the active work of the past winter, the executive Committee of the Department of Science and Arts, with a view of increasing the membership of the Ohio Mechanics' Institute, issued a circular to the public, and it may not be improper to make the following extracts from the same, viz:

The "Mechanics' Institute" was established in 1829, with the object, as expressed in the act of its incorporation, of "advancing the best interests of the Mechanics, Manufacturers, and Artisans, by the more general diffusion of useful knowledge in those important classes of the community."

True to its high purpose, the Institute has pursued an undeviating course through many vicissitudes, until it has reached a condition of comparative financial prosperity, and is fairly embarked with renewed vigor upon a career of enlarged usefulness.

In the past the Mechanics' Institute has done much for the manufacturing interests of Cincinnati, and is capable of doing much more in the future. It organized our first Expositions, and for many years carried them on unaided, and proved their financial feasibility and industrial value. It has, for over a quarter of a century, carried on a "School of Design" in the form of night classes, imparting technical instruction in drawing, designing, modelling, etc., to the sons of mechanics and others, and the knowledge thus gained has been incorporated directly into the industrial products of our city. It also established the first public library of our city, and has, for fifty years maintained a public reading-room.

Within the past two years it has taken a new departure. By resolution of the Directors, adopted December 14, 1880, the scientific duties of the Institute were confided to a Committee of its members known as the "Department of Science and Arts," organized soon thereafter with a membership including many leading citizens prominent in scientific and industrial circles. The Department is now fully organized, with Sections of Chemistry and Physics, and Mechanics and Engineer-

ing. The general scheme of its purposes contemplates general meetings of the Department, monthly, for discussion of topics of a popular interest relating to the industrial applications of science; and monthly meetings of its various sections for the advancement of scientific objects. * * *

Whether engaged in manufacturing enterprises or not, every man's business is directly or indirectly dependent on the application of science to industry; and, beyond this, even in the capacity of citizen and householder, every one is interested in the spread of knowledge touching subjects of such importance as House Ventilation, Sanitary Plumbing and Sewerage, Food Cultivation, and Water Supply—these being some of the topics assigned for discussion during the coming season.

A further opportunity of usefulness is offered in the establishment of the much needed "Institute of Technology"—a work as important to the industries of Cincinnati as the Exposition—toward which the initial steps have already been taken by adding courses of illustrated lectures on practical science to the instruction given by our School of Design.

In view of these objects we appeal to the intelligent and enterprising manufacturers and business men of Cincinnati, to interest themselves in the Mechanics' Institute as an institution belonging particularly to themselves, and capable, with their active co-operation, of becoming one of the most beneficial forces in our city in the direction of practical good to themselves and those who are to come after them."

The great Industrial Expositions have been held, since 1870, under direction of a "Board of Commissioners," composed of representatives from the "Chamber of Commerce," "The Board of Trade," and "The Ohio Mechanics' Institute;" this report records the success of the Tenth Exhibition; which was held from September 6th, to October 7th, 1882, and announces the holding of a similar one in the autumn of 1883.

The financial affairs of the Institute are reported as satisfactory.

Mr. John B. Heich, the principal of the school, no longer called "The School of Design," but now known as "The School of Technology," reports an attendance as follows:

	Members.
First. Mechanical Department	162
Second. Architectural Department.....	88
Third. Artistic Department	89
Modelling in Clay as applied in the several branches of Industrial Art	16
Elementary Geometry and Mathematics, as applied to the Industrial branches.	31
Elementary Mechanics and Physics, as applied to the Industrial Branches..	29
<hr/>	
Total enrollment	415
Duplicate enrollment	51

Total number of pupils..... 364

It will be noticed that the number enrolled is much larger than at any previous session. It was found necessary to remove the Architectural Department into the room formerly used by the Department of Science and Arts, in order to accommodate the additional number enrolled. No further number can be received, with our present facilities for their accommodation.

It is exceedingly pleasing to note the large number enrolled in the Mechanical Department, which is more directly connected with our industrial and manufactur-

ing branches. Of the number enrolled the past session a large number were of a more advanced age than those usually enrolled, evincing, in a very marked degree, the importance and use of the school to the mechanics.

The rules adopted by the Institute for the government of the school at previous sessions will be found attached to this report.

The school during the past session has been under the general supervision of myself, in connection with the Committee in charge of this branch of the Institute, and the following instructors, viz :

1st. Mechanical Department, in charge of.....	{ Mr. Ernest Lietze, Mr. George Wadman, Mr. Bert L. Baldwin, Mr. Carl Spengel.
2nd. Architectural Department, in charge of.....	{ Mr. Wm. W. Franklin. Mr. Gregory S. Stewart.
3rd. Artistic Department, in charge of.....	{ Mr. W. R. McComas, Mr. Jno. H. Twatchman. Mr. Louis Ritter.

Special Classes.

Modelling in Clay, in charge of.....	Mr. C. L. Fettweis.
Geometry and Mathematics, in charge of.....	Mr. Jas. B. Stanwood.
Mechanics and Physics, in charge of.....	Prof. Robt. B. Warder.

A large number of the pupils have evinced a great interest in the course of Scientific Lectures given under the auspices of the Department of Science and Arts; indeed, they have constituted a large portion of the audiences who have regularly attended these important lectures.

In the report of the Board of Directors full mention will be found in the special provision for the continuous attendance, as provided for in the system for the award of medals and premiums.

The specimens, showing the work of the several departments, have been on exhibition this evening, and I feel assured that the Board of Directors and members will be pleased at the excellence and progress made during the past session.

Attached to this report is a list of those to whom medals and certificates have been awarded.

Respectfully submitted,

JOHN B. HEICH,
Principal."

The 56th Annual Report of the Board of Directors, continues the history of the Institute to April 1st, 1884, which, owing to a change in the By-laws requiring the fiscal year to begin April 1st, instead of March 1st, comprises the history of 13 months.

Healthy activity and growth is reported in the several departments of the Institute,—namely; "The Library," "Reading Room," "Courses of Lectures," and in the "Department of Science and Arts;" the discussions of papers read at the general meetings of this department evinced great interest, while the meetings of each of the three sections of this Department "Mechanics and Engineering," "Chemistry and Physics," and "Electricity," were well attended and are similarly characterized; The Scientific Journal of the Institute has been regularly issued; the finances of the Institute are sound; the eleventh exhibition of Art and Industry held under the auspices

and joint control of The Cincinnati Chamber of Commerce, Board of Trade, and Ohio Mechanics Institute, was open from September 5th to October 6th, 1883, "and fully maintained the prestige of former expositions;"—the Twelfth Exhibition, will be opened September 3rd and closed October 4th 1884.—

The school of the Institute which was new named and reorganized last year, is given yet another appellation in this report and is now called "The Industrial and Art School." The courses of study seem to have been again changed and more thoroughly graded.

The Directors report as follows upon this school :

INDUSTRIAL AND ART SCHOOL.

"The school formerly known as the School of Design of the Ohio Mechanics' Institute, has been entirely reorganized by the Board under direction of the Committee in charge. It is now conducted under the name of the Industrial and Art School of the Institute. The desire of the Committee was to give a wider range of instruction than formerly, or than was included under its previous name. The School during the past, or 28th session, has been graded as far as practicable to the requirements of those attending.

The three principal departments have been graded into: Elementary, Intermediate, and Advanced Grades; and in the case of the Mechanical the Elementary grade has been arranged, after examination, into four classes for specific instruction. It has been found necessary from the largely increased enrollment, and the extended course of instruction, that the several departments be held on different evenings, extending over five evenings of the week, in place of two, as has been the custom heretofore.

The committee devised a new system of awards in place of the usual medals. Awards that would at once be of practical service to the pupils, and prove of greater value.

The enrollment during the session was 428, being an increase of 64 over the previous session.

While the plan adopted has in a measure been somewhat experimental, the Board feel encouraged at the result, but from the experience gained they firmly believe that changes may be inaugurated that will insure greater success for another season.

Owing to the course of instruction being more varied, necessarily less time has been devoted to Drawing. The results in this direction are not expected to reach the proficiency of some of the previous sessions, but the wider range of knowledge imparted to the pupils in connection with Arithmetic, Geometry, Natural Philosophy, Machine construction, strength of Materials, Mechanical tables, etc., etc., are far more important as an equivalent in the light of practical technical instruction. For further information in relation to the School, we refer to the report of the Principal hereunto attached."

In place of the Medals formerly awarded, appropriate and useful articles, such as boxes of drawing instruments, boxes of paints, or books on their various subjects of study, are now given to the successful competitors for prizes.

The report of the Principal of the School gives in detail the attendance upon each department of the School.

“REPORT ON THE INDUSTRIAL AND ART SCHOOL, OF THE OHIO MECHANICS’ INSTITUTE.

[Formerly called the School of Design.]

Twenty-Eighth session, 1883-1884.

OFFICE OF THE OHIO MECHANICS’ INSTITUTE,
Cincinnati, April 8th, 1884.

TO THE BOARD OF DIRECTORS :

Gentlemen—In accordance with the duty devolving on me, I herewith submit for your approval my annual report, showing the operations of the Twenty-eighth Session of the Industrial and Art School.

The following statement will exhibit the number enrolled in each department during the Session :

	Members.
First. Mechanical Department.....	196
Second. Architectural Department.....	92
Third. Artistic Department.....	132
Modelling in Clay.....	8
Total enrollment.....	<hr/> 428

The members attending each year, for the 27th and 28th years, are 364 and 428 respectively—a marked increase over any previous years ; and bring the total number of pupils enrolled since the organization of the School in 1856, to 6,025. The studies taught and the divisions and grading of the classes are detailed as follows :

“It will be noticed that the enrollment is much larger than at any previous session. The arrangements made by the committee in charge, in increasing the number of sessions extending over five evenings of the week, has enabled a larger number to be accommodated than could possibly have been done with only two sessions each week as during previous years.

The inauguration of a wider and more extended course of instruction, while experimental, has been attended with satisfactory results, and has laid the foundation for more advanced study to those who appreciate its necessity and are desirous of obtaining greater proficiency.

In accordance with the desire of the Board, and as arranged by the Committee, a new system was carried out as far as practicable as follows :

MECHANICAL DEPARTMENT.

Elementary Grade.—Elementary Arithmetic, Elementary Geometry, Rudiments of Mechanical Drawing and Drawing of Machine Details, Use of Engineering Tables.

Intermediate Grade.—Arithmetic, Geometry, Machine Drawing and Sketching, Use of Engineering Tables.

Advanced Grade.—Advanced Geometry, Machine Design, Natural Philosophy, Use of Engineering Tables.

Additional Classes.—Those who so desire may take advanced lessons in Geometry and Natural Philosophy.

In charge of Ernest Lietze, James B. Stanwood, Bert. L. Baldwin, Walter Laidlaw, E. A. Kebler, Ernest Richter.

ARCHITECTURAL DEPARTMENT.

Elementary Grade.—Simple Construction, Five Orders of Architecture.

Intermediate Grade.—Scale Plans and Elevations, Details, Geometry.

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Advanced Grade.—Coloring of Scale Elevations, Perspective Colored and Finished Perspective.

In charge of W. W. Franklin, Samuel Godley.

ARTISTIC DEPARTMENT.

Elementary Grade.—Drawing from the Flat, Light and Shade. Sketching Simple Objects.

Intermediate Grade.—Construction Lines in Figure Drawing, Perspective, Drawing from the Antique, Figures, Animals, Scrolls, etc., Sketching from Nature—Still Life.

Advanced Grade.—Heads, Light and Shade; Figures, Texture; Animals, Anatomy; Landscape and Aerial Perspective, Etching and Lithographic Work.

In charge of Wm. R. McComas, Wilson Porter, Herman Weber.

MODELLING DEPARTMENT.

In charge of C. Leopold Fettweis.

The teachers in the several departments have been assisted by the committee, Messrs. Stewart, Collord, and Danks, who have been frequent in their attendance, giving valuable suggestions and assistance in promoting the best interests of the school. * * * *

Reference is made to certain hindrances which prevented constant attendance during the past year; the enforced closing of the school by reason of the great flood and the stopping of the gas supply for a fortnight, etc. The report of the Principal concludes thus:

“The knowledge imparted to the pupils, all things considered, I believe to be far more than at any previous session. Owing to the time occupied in the enlarged course of instruction, the progress made in the branches previously taught will necessarily be not so prominently noticed.

In the report of the Board of Directors, matters pertaining to the grading, the new system of awards, etc., have been appropriately explained. It is therefore unnecessary for me to refer to them.

Respectfully submitted,

JOHN B. HEICH,
Principal.”

The cost of carrying on the work of the Institute the past year seems to have been about \$10,000. The expenses of the school are so blended with the general disbursements of the Institute, that it is difficult to ascertain the actual charges incurred on account of the “School,” they appear to range somewhere between \$2,000 and \$4,000.

In the Fifty-Seventh Annual Report, (April, 1885), the Directors record the success of the school during the past year; in accordance with their desire greater attention has been given to imparting special technical training adapted to the different trades of the students; the school has also been graded with three grades in each department, besides special classes. Periodical lectures on special subjects have been delivered in the Mechanical Department, and regular lectures each week, in the Architectural Department, in which also an entirely new plan of technical instruction has been introduced.

The following extracts are from the report of the Principal of the School.

REPORT ON THE INDUSTRIAL AND ART SCHOOL OF THE OHIO MECHANICS' INSTITUTE.

[Formerly called the School of Design.]

Twenty-ninth Session, 1884-1885.

OFFICE OF THE OHIO MECHANICS' INSTITUTE,
Cincinnati, April 7th, 1885.*To the Board of Directors :*

GENTLEMEN: In accordance with the duty devolving on me, I herewith submit for your approval my annual report, showing the operations of the Twenty-ninth Session of the Industrial and Art School.

The following statement will exhibit the number enrolled in each department:

	Members.
First. Mechanical Department	131
Second. Architectural Department.....	90
Third. Artistic Department	134
Modelling in Clay.....	6
Total enrollment	361

In the report of the year previous an increase of 64 pupils is noted—the number in 1883-'84 being 428, as contrasted with 364, of the year before. This year the total is 361.

It will be noticed that our total enrollment is not quite as large as the previous year. This is owing to reasons easily explained. The falling off has been principally in the Mechanical department, and very largely due to so many being out of employment, making it difficult to incur the necessary expense. We all know the discouraging feeling of a lack of an income on account of non-employment.

I however believe that the good accomplished by attendance has far exceeded that of any previous session, and a largely increased amount of information has been imparted than during any previous season.

The courses of study remain as given in the previous report. The following statements are, however, added under the several departments.

MECHANICAL DEPARTMENT.

* * * * *

In charge of Ernest Lietze, Bert. L. Baldwin, Walter Laidlaw, Ernest Richter, and special instruction by Mr. Jas. B. Stanwood.

Brief lectures have been given from time to time upon important topics, viz.: Construction, Engineering Tables, How to Cut the Pencil for using with the Square and Bow Pencil, How to use the T Square, Set Square, and Drawing Instruments, Bisecting of Lines, How to Draw and Indicate Center Lines, Radial Lines and Dimension Lines, etc., etc., Line Shading, Scale Drawing, How to Construct Scales, How to Proportion and Draw Hexagon and Square Nuts, Projection of Plain Objects, Construction of Block Letters, Plain and Oblique Projection, How to Indicate the Section of Different Materials, Free Hand Sketching, etc., etc.

ARCHITECTURAL DEPARTMENT.

* * * * *

"In charge of Samuel S. Godley, Chas. E. Hannaford and W. R. Forbush.

A new departure has been made in this department. Weekly lectures have been given in each grade, viz. *Figure Construction, Styles of Architecture, The Orders,*

Details, Perspective, Sketching, Scale Drawing, etc., etc. These lectures have generally received the earnest attention of the members."

ARTISTIC DEPARTMENT.

* * * * *

"In charge of Wm. R. McComas, Herman Weber and C. A. Messmer.

Special instruction has been given, specially adapted to the requirements of the members of the several grades, such as Perspective, Sketching, Figure Drawing, Shading, Composition, etc."

MODELLING CLASS.

In charge of C. Leopold Fettweis.

ARITHMETIC AND GEOMETRY CLASSES.

In charge of E. A. Kebler and C. A. Homes.

* * * * *

"The School is developing in a marked manner in the direction of technological instruction. More than one third of the school hours have been devoted to information of that character, covered by special lectures, etc. This detracts, in a measure, the progress and proficiency in drawing. Considerable attention has been given to practical drawing, more appropriate for the workshop, rather than viewed in the light of exhibition drawing. The desire of the Board of Directors I know to be for an advancement in this direction, and the efforts of the teachers have been with the view of carrying out that purpose.

With the best wishes for the continued success of the School, this report is Respectfully submitted.

JOHN B. HEICH,
Principal."

The Directors report in the Fifty-Eighth Report (1886), the growing success of the school.

The Principal reports an increase in attendance over the previous year, recording an enrollment of 375 pupils as compared with 361, of the year before. Distributed among the several Departments as follows:

	Members.
First. Mechanical Department.....	127
Second. Architectural "	114
Third. Artistic "	124
Fourth. Modelling in Clay	10
Total enrollment.....	375

The Principal comments favorably upon the changes by which definite technical instruction in the different departments is afforded as fully as the facilities at hand will permit. The courses are given in detail but are here omitted as they are substantially the same as are given in the Fifty-Ninth Annual Report (1887) which, as it is the final report made by Mr. Heich, will be given substantially in full.

The following account of an innovation in the Architectural department is quoted.

"A new departure has been made in this department. As a basis of instruction

in the three grades, a new system was adopted. Complete plans and elevations were prepared of a large brick residence and a frame residence, the exact counterpart of the working plans in use in an architect's office, and on which the bids are made and the work is executed, with every figure and detail upon them. Fifty sets of each were lithographed, in order that a large number could have similar work, and receive the same general instructions, giving them in fact practical work, similar to those on which they are daily associated.

The lectures on construction, details, etc., were in illustration of the work upon the above mentioned drawings."

The report closes with a repetition of the final statement in the report of the year before as to the changes in the methods of teaching, looking rather to practical results than to mere finish of the drawings.

"This has been in accordance with the system adopted by the committee. The result, I believe, has been a gratifying improvement.

With the best wishes for the continued success of the School, this report is Respectfully submitted.

JOHN B. HEICH,
Principal."

The Fifty-Ninth Annual Report (1887), contains the resolutions adopted by the Board of Directors on the resignation of Mr. John B. Heich, as clerk of the Board, which have already been given in the foregoing account of the Institute.

The final report made by Mr. Heich, as Principal of the School, when, after thirty-one years of continuous service in that capacity, he resigned his official positions in the Institute, by reason of intended removal from the City, follows in full, with the omission of the table of enrolled pupils for each year which will be given in the latest report by the principal of the school quoted from in this Report.

REPORT ON THE INDUSTRIAL AND ART SCHOOL OF THE OHIO MECHANICS' INSTITUTE.

[Formerly called the School of Design.]

Thirty-first Session, 1886-1887.

OFFICE OF THE OHIO MECHANICS' INSTITUTE,
Cincinnati, April 5th, 1887.

To the Board of Directors :

GENTLEMEN: In accordance with the duty devolving on me, I herewith submit for your approval my Annual Report, showing the operations of the Thirty-first Session of the Industrial and Art School.

The following statement will exhibit the number enrolled in each department.

	Members.
First. Mechanical Department	150
Second. Architectural Department	112
Third. Artistic Department	81
Modeling in Clay, as applied in the several branches of Industrial Art	9
Total enrollment.....	352

The enrollment during the past session, although not quite equal to that of the previous year, was somewhat larger in the departments having a more special connection with the industrial branches—for example, the Mechanical and Architectural.

Particular attention was invited in the previous report to the course of study that had been adopted by the committee in charge, and I am happy to say that the same general plan has been continued, with such slight changes in the matter of detail as appeared to be desirable, and has been attended with satisfactory results. Without doubt the school is developing in interest and assuming a more practical character, and appears to be appreciated by the parties most interested.

As a rule the course of study has been but slightly changed during the past session, and I think it is not out of place to again refer to it in detail, viz:

"We are advancing by degrees from the mere drawing school of the past, imparting practical knowledge that will greatly benefit all who are fortunate enough to attend; in fact, it would require years of experience in the workshop to supply."

MECHANICAL DEPARTMENT.

Elementary Grade—Rudiments of Mechanical Drawing and Drawing of Machine Details, Class Instruction.

The Elementary Grade has had the following class instruction: How to cut the pencil for using with the T square and bow pencil. How to use the T square, set square, and drawing instruments. Bisection of lines. How to draw and indicate centre lines, radial lines and dimension lines. Line shading. Scale drawing. How to proportion and draw hexagon and square nuts. Projection of plain objects. Construction of block letters, plain and oblique projection. How to indicate the section of different materials. Free hand sketching and making drawings from free hand sketches.

In charge of Walter Laidlaw and Ernest Richter.

Intermediate Grade—Geometry, Machine Drawing and Sketching, Class Instruction, Lectures.

It was assumed that the pupils entering this grade had mastered the art of making line and copying drawings, most of them having passed last session in the elementary grade. So in starting in the intermediate grade they were required to make free hand sketches of detail with all dimensions figured, copied from the blackboard, and then lay down the drawing from their sketch, to scale.

By this course the student had to rely on himself, and not on a copy. This working from a sketch is about the class of work a young man would have on entering a draughting room or pattern shop. Early in the session the details were simple in outline, plan and elevation. Later they were more complicated, showing details in section, with shadow lines. Finally, assembling the details in a general plan, and line shading.

In charge of Bert. L. Baldwin.

Advanced Grade—Geometry, Machine Design, Use of Engineering Tables, Class Instruction, Lectures.

Intersections of surfaces and solids. Penetration of a cone, sphere and filleted cylinder by a hexagonal prism, applied to the projections of hexagonal nuts assumed to be cut out of a cone, sphere and filleted cylinder. Delineation of lines of intersection, parabola, hyperbola, ellipse, and their approximations. Exercises in shading with India ink. Conventional colors. Projections of helices—Cylindrical helix, different assumptions of its generation, Conical helix, Spherical helix, Helicoid with oblique generatrix, Helical solids, Serpentine, Screw. Line shading. Gearing—Definition of relative motion, the instantaneous center, the polygon of centers, the centroids, the normal of a curve, the construction of the cycloid, epicycloid, hypocycloid

and involute of a circle, their principal properties and the approximation of these curves. Determination of adontoids, Reubaux's methods, Poncelet's method, construction of the line of contact, and the path of the point of a tooth.

The more advanced pupils sketched parts of machines, and whole machines in the workshop, under the direction of the teacher, and drew the same in orthogonal and isometric projections.

In charge of Ernest Lietze.

The department of Practical Mechanics has been in charge of Bert. L. Baldwin, who has delivered each Wednesday evening during the session, lectures or "talks" upon the following topics: The Mechanical Powers, Power and Work, Strength of Materials, Gearing, and the Side Valve. Each of these topics has taken from four to six evenings each, and in explanation of the principles set forth by them, many practical examples were worked out in the presence of the students. It was not expected that any member of this department would become proficient in the subjects under discussion, but it was hoped that they would obtain a fair idea of how to go to work to get information about the leading mechanical principles, or at least to excite their interest in them. The course has been well attended, the attendance being larger than last year, which was far above the average.

ARCHITECTURAL DEPARTMENT.

Elementary Grade—Elementary Geometry; Scale Plans and Elevations, coloring same; Construction; Lectures.

Intermediate Grade—Scale Plans and Elevations, coloring same; Details, Lectures; Construction; Lectures.

Advanced Grade—The Five Orders, Lectures; Perspective, Lectures; Original Work, as Problems, optional.

The new departure which was carried into effect during the thirtieth session, of working from completed plans throughout, was continued and met with the best results.

The lectures illustrating the same were well attended, and a deep interest was manifested by the pupils in the several grades. The plan of lectures in each grade was carried out; for example, in Geometry, Construction, Details, Perspective, the Order, etc.

Advanced Grade in charge of Harvey E. Hannaford.

Intermediate Grade in charge of Chas. E. Hannaford.

Elementary Grade in charge of Thornton Fitzhugh.

ARTISTIC DEPARTMENT.

Elementary Grade—Drawing from the Flat, Light and Shade, Sketching Simple Objects.

Intermediate Grade—Construction Lines and Figure Drawing, Perspective, Drawing from the Antique, Figures, Animals, Scrolls, etc., Sketching from Nature—still life.

Advanced Grade—Heads, Light and Shade; Figures, Texture; Animals, Anatomy; Landscape and Aerial Perspective; Etching and Lithographic Work.

In charge of Wm. R. McComas, Valentine Bonhajo and Arthur Tannenberg.

MODELING CLASS.

In charge of C. Lepold Fettweis.

The general character of the work produced will be best shown by the general exhibition of the school, and illustrating in a great degree the plan of instruction; a large portion of the work is well executed and highly creditable to both teachers and pupils. The result will certainly be gratifying to all friends of the school.

Extending my earnest wishes for the continued success of the school, which I have watched with a deep and constant interest for thirty-one sessions, having had the honor of organizing the school in 1856, and have continued uninterruptedly during the whole period, I now take my final leave for new fields of duty, but the memory of my associations in this department will be one of the most conspicuous pages in the volume of my existence, and I say unto thee Farewell in all that this term implies, this report is

Respectfully submitted.

JOHN B. HEICH,
Principal.

In the Sixtieth Annual Report by the Board of Directors (April 1888), President Gilpin, thus commends the school :

INDUSTRIAL AND ART SCHOOL.

The thirty-second session of the school closed March 15th, the enrollment of scholars being five hundred and five, an increase of one hundred and fifty-three over the previous session, and much larger than at any time in the history of the school.

We think that the work of the scholars, as shown at our annual meeting, will be sufficient proof that, notwithstanding the largely increased number in attendance, the teachers did their whole duty, and have left their imprint on the hearts of their pupils.

We also think that the work of the scholars will show that they appreciate the fact that the school was established, and for thirty-two years has been maintained, NOT as a source of profit to the Institute, but for the sole benefit of the scholars, and that the members of the "Historic" Ohio Mechanics' Institute—

"Live for those who need them,
For the good that they can do."

For further information in relation to the Industrial and Art School, we refer you to the report of the Superintendent of that department.

As the first report made by Mr. R. E. Champion, who succeeds Mr. John B. Heich, as clerk of the Board of Trustees and Principal of the school, the latter, under the new title of "Superintendent," is given in the Sixtieth Annual Report of the Board, it is here inserted at length.

The inauguration of a new Principal and the great increase in the number of pupils, more than one hundred and fifty in excess of last years attendance, lend additional interest to the details of instruction for comparison with those of the previous year which had already been sensibly modified from those of earlier years, in accordance with the desire of the Board to develop the special technical features of the School.

REPORT ON THE INDUSTRIAL AND ART SCHOOL OF THE OHIO MECHANICS' INSTITUTE.

Thirty-Second Session, 1887-1888.

OFFICE OF THE OHIO MECHANICS' INSTITUTE,
Cincinnati, April 3d, 1888.

To the President and Board of Directors :

GENTLEMEN : I submit, herewith, the Annual Report of the department of the

Institute known as the Industrial and Art School. The thirty-second session of the school commenced October 18, 1887, and closed March 15, 1888.

The following statement will show the number of scholars enrolled in the different departments :

	Members.
First. Mechanical Department.....	189
Second. Architectural Department	140
Third. Artistic Department	164
Modeling in Clay.....	12
Total enrollment.....	505

It will be seen that the increase in number of scholars over the last year was one hundred and fifty-three, and the number enrolled was largely in excess of any year since the establishment of the school. On account of the large number of scholars, it became necessary to employ additional teachers, and Mr. Garret Simkinson was secured for the Mechanical Department, and Mr. Geo. S. Werner for the Architectural Department.

Among the scholars of this session were boys who had seen but seven summers, and from these, just on the threshold of life, they ranged upward until the student was reached over whose whitened head had passed the storms of sixty-five winters, all attending the school maintained by your liberality for the same purpose—the same end.

The beginner, with an idea and ambition looking higher than the work-bench, hopes, by the aid of the instruction he may obtain in your school, to become a master-workman and make his mark among his fellow-men. The gray-haired man, perhaps a foreman in some extensive manufacturing establishment, finding himself deficient in some branch of his business, comes to your noble Institute, there acquires the missing link, returns to his shop thoroughly competent to intelligently guide and direct the hundreds of workmen who may be under his control.

A representative of the Cincinnati *Times-Star*, who visited the school a few weeks since, writes as follows :

“Have you ever visited the Mechanics' Institute night school? It will be a genuine surprise. There are boys there with the grime of their daily toil still on their hands and faces, just as they came from the shop and the mill and the foundry where they had been toiling the livelong day. There are boys who toil with an idea filling their young heads. They are not always going to work at the bench. Not they. There are always plenty for that, and there is always plenty of room up higher.

Some of the boys are sent here by their parents. But by far the greater majority are boys with an idea and an ambition. Some of them come there without their suppers, and many eat their scanty lunches in the anterooms (possibly the remnants of their noonday lunch) as they would not have time to go home and get back.

Some of the noblest men of our city have come up through these ancient halls of the Institute, and they were lifted to their feet by the self-sacrificing men toiling there night after night for years, when they would prefer, as anybody would, to be resting at home after the arduous day of their own labor for bread.

One of the teachers said :

“I tell you no money would repay me for coming up here for two hours at night, as I have done for six years. It is the encouragement and satisfaction that one has that he is actually doing some good in the world. It is the pleasure of helping worthy boys upon their feet and giving them a good push forward. That's where the pay comes in.”

And future generations will rise up and call such men blessed. This has been the greatest year in the history of the Institute.

There are three departments. The mechanical, the architectural and the artistic, which also includes the modeling class. Pupils are given instructions from the very rudiments of mechanical drawing up through the intermediate to the advanced grades. Boys come here who don't know how to hold a pencil even. They are gradually put to drawings carefully selected to their abilities. After they become proficient in line and copy drawings they go up to an intermediate grade where they make free hand sketches of detail and then make a drawing to scale from the sketch. In the advanced, or third grade, they are put at machine designs, computing strength of materials and the drawing of the complete machine. Boys from machine shops come here to grow. But a machine shop boy is not always to be found learning about machines and things. No, siree, some of the handiest boys with the pencil of the artist are those who toil in the shop and factory. They will some day be useful designers, and, mayhap, a master with the brush that will immortalize himself on canvas is being nurtured in this healthy artistic atmosphere.

Look here, my tired, ambitious boy! Here's a sample of what has come from this mechanical department. To be sure, it is the best there is in the shop. All can not expect to reach it. But all can reach at it, and this effort will make them better and worthier members of society. Charles Bowers only a few years ago was a lathe hand in Lane & Bodley's foundry. He took lessons in mechanical drawing in this night school, he soon grew into great demand for his ability and expertness. He rose from a meager salary until now he commands \$10,000 a year, and an interest in the business of one of the great shops of Springfield, Ohio.

The architectural department is presided over by men who rank among the best architects of the city. In the advanced grade the greatest variety of work is done. Pupils are required to make full and accurate working details for houses that have previously been drawn to scale, considerable scope being allowed each pupil in designing ornamented parts. The latter part of the advanced grade work is devoted to original designing, perspective and the study of the orders.

Do practical architects spring from these embryonic precincts? Yes, there are young men working in architects' offices in this city to-day whose young ideas were here taught first how to shoot architecturally. In the artistic department perhaps the predominating element is the boys from the lithographing establishments. Here is taught free hand drawing, perspective, crayon, for painters, plasterers, carvers, cabinet makers, etc. Here are ambitious boys modeling in clay. A fine head of Washington was uncovered to the gaze, and some of the specimens of work shown in this department would be a credit to artists of national reputation.

At 9 o'clock these boys passed down stairs quietly and orderly, which is saying a great deal for so many boys with heavy boots."

The course of study has been somewhat changed during the past session, and I would call your attention to the following detailed report of the several departments:

MECHANICAL DEPARTMENT.

Elementary Grade.—Rudiments of Mechanical Drawing. Drawing from the Flat. Elements of Projection.

A large majority of the pupils in this grade were beginners. They were instructed in the rudiments of mechanical drawing, the use of the pencil, pen and drawing instruments. The exercises consisted in drawing machine details in pencil and ink. The copies for these exercises were carefully selected from modern machinery, the drawings being finished in the style of working drawings.

The objects in view were: First, to instruct the pupil in the art of reading the universal language "Drawing," which, at this present "Age of Machinery," every mechanic is expected and required to understand.

Second, to drill the scholars in accurate measurements, and in making clean, sharp, distinct and steady lines, which ability is required of a young man employed in the drawing department of a machine shop, or other industrial establishment. At the same time the pupils were made acquainted with the elements of projections, and such geometrical constructions as the objects presented.

This class was in charge of Mr. Garrett Simpkinson.

Intermediate Grade.—Machine Drawings from Sketches. Projections.

Many of the pupils in this class passed the elementary grade last session, and it was assumed that they had mastered the art of making lines, measuring correctly and copying drawings. Starting in the Intermediate Grade, they were required to make free hand sketches of machine parts with all dimensions figured, copied from the blackboard, and then to lay down the drawings from their sketch, to scale, in plan, elevation and section.

Early in the session simple details were selected, later they were more complicated. At the same time the pupils were instructed in such problems of orthogonal projections, construction of lines of intersection, etc., which the objects involved. Making a free hand sketch is about the first step of recording an inventive thought, and the head of a mechanical work shop can not be a success, and no one wishing to communicate mechanical ideas to others, can do so intelligently, unless they are competent to make a free hand sketch. Drawing from sketches made by his employer, or foreman, is usually the first work intrusted to a young man in the drawing room, after he has learned to delineate a correct orthographic projection. This grade was in charge of Mr. Bert Baldwin and Mr. Ernest Richter.

Advanced Grade.—Machine designs, strength of materials, drawing of complete machines.

The pupils of the advanced grade were those who passed the intermediate grade last session and others who were previously enrolled in this class.

In order to open a new field of study for the older pupils, continuing the subject of the previous sessions, and at the same time offering to scholars remaining in this class but one session, a subject that is complete in itself, each year the teacher of this grade selects a branch of machine design, or of descriptive geometry, as a special study. This year "The strength of materials graphically demonstrated," was chosen. As an introduction to this subject of study, it was found necessary to teach the elements of grapho-arithmetic. It was also necessary to define a number of mechanical comprehensions, to call attention to and explain certain laws of mechanics, to insert and demonstrate various geometrical, arithmetical and algebraical rules.

At the beginning of the session the instructions were given before the whole class, but later it became necessary to instruct the pupils in groups or individually. The first exercises drawn were diagrams concerning graphic multiplications, divisions, involutions and evolutions. As an example of applied graphic compound multiplication, the pupils constructed a diagram, illustrating graphically the relations between the belt and pulley, revolutions of pulley per minute, velocity and surface speed of belt, force transmitted per unit of width, and horse powers transmitted by belt. As an application of graphic involution and evolution, combined with multiplication, the pupils designed a graphic in which the abscisses of curves (quadratic parabola), drawn in rectangular system of co-ordinates, represents the safe working loads and the corresponding ordinates, the diameters of round bars, in various materials, in tension or simple compression. The study of the strength of materials was treated in a manner as elementarily as possible, but nevertheless scientifically. All rules and formula were developed and proved. The pupils followed the subjects with animated interest. The advanced grade was in charge of Prof. Ernest Lietze.

ARCHITECTURAL DEPARTMENT.

The work in this department during the session has been of more than usual interest and of great profit to the pupils. Naturally, the large number of new scholars made the elementary class very large, and in addition to Mr. Thornton Fitzhugh, Mr. Geo. S. Werner was secured for this grade.

The Intermediate Grade remained in charge of Mr. C. E. Hannaford, and Mr. H. E. Hannaford conducted the work in the advanced grade.

The course in the Elementary Grade has been: Elementary Geometry, Plain Projections and Isometrical Projections. The pupils were first instructed in the use of drawing instruments, and then given a thorough course in practical geometry, following which the principles of projection were taught, and finally isometrical projection. All drawings made in this department have been carefully executed and have a direct bearing on the work which followed in the more advanced grade.

In the Intermediate Grade the pupils have made complete quarter scale drawings (plans and elevations) of both brick and frame dwelling-houses. The meaning of the plans has been fully explained, and the construction of the different parts made clear, so that the scholars in this department may understand the working of any ordinary plan. These drawings have been made accurately to scale and carefully figured so that when the course is finished each pupil will have a complete working plan, of both a frame and brick dwelling. The work in this grade has been of great utility to the pupils, and especially so to those directly connected with the building trades.

In the Advanced Grade the greatest variety of work has been done. During the first half of the term all the pupils were required to make full and accurate working details of the houses that had been drawn to small scale in the intermediate grade. In this work considerable latitude was allowed, each pupil designing, under the direction of the teacher, all ornamental parts—thus scope was allowed for the exercise of taste and skill. The last half of the term was devoted to original designing, perspective and the studying of the orders. The advanced grade work has been profitable to the pupils and the aim has been to make them understand the practical side of architectural work, and at the same to guide them in the attainment of a correct taste.

Lectures this year were abandoned on account of the lack of a suitable room, but by the addition of another teacher to the corps, more individual attention has been given to each pupil.

The drawings exhibited by the Architectural Department are not showy, and may seem of less general interest than those of other departments, but the practical results attained are very satisfactory.

ARTISTIC DEPARTMENT.

This Department is divided into three grades: Primary, Intermediate and Advanced, and was in charge of Messrs. W. R. McComas, Valentine Bonhajo and Herman Webber, gentlemen who are daily practicing the branches they teach.

The school possesses a large number of copies of sketches and drawings, as also full length statues and a large property in busts and fragments for the use of the scholars. The course of study pursued is not intended to make artists of the pupils but to give all a practical knowledge of drawing. They study from the round and flat, and also from the antique, and some of the work of the pupils this session are creditable specimens of art. The design of this department is practical, and has for its object the education of pupils for some useful employment in which the art of design drawing is the principal or accessory occupation.

The pupils are admitted without any previous knowledge of drawing; owing to the low grade of scholarship the result is not so pronounced as is witnessed in other institutions devoted to art culture. The classes this session were composed,

almost entirely, of new beginners, the majority of whom are receiving instruction for the first time. Yet the work will compare very favorably with that of previous years.

The art of charcoal drawing, which now occupies a very high position in the opinion of artists, as an independent means of expression, is a curious example of what may be called promotion among the graphic arts. It is not quite an isolated example, for there has already been one or two instances in which arts have been strangely neglected for a long time and afterward suddenly taken into favor and developed by the practice of very able men, but none so remarkable and surprising as the history of charcoal. We have succeeded, this year, in interesting a large number of pupils in its merits, and the work will speak for itself.

In lithographic and crayon drawing this school has always maintained a good standard. There are two principal divisions in lithography, one imitates chalk drawings—the other drawings in ink. Both are founded on the same chemical principle, the repulsion between water and grease, but the art would not be possible had it not been for the discovery of a peculiar calcareous stone which imbibes water and grease with equal readiness, having an impartial affinity for both.

Instruction has been given in these branches with marked success. Some instruction has also been given in water monochrome, which is identical with water color, except that one is chromatic, and the other is not, as the same paper, brushes and medium and handling are used in both. It is the common practice to begin water colors by passing through a preliminary style of monochrome, and a few specimens in sepia will be found in the studies of the last session.

Among the pupils are a number of wood engravers' apprentices, who have received instruction adapted to that art, an art which is known all over the world, and yet, at the same time, is less understood than others which are now rarely seen. It is properly divided into four classes: First, that which is done for its own qualities as an independent method of engraving. Second, that which is done to give an exact fac-simile of a drawing. Third, that which represents shades by lines. Fourth, that which is done to imitate the qualities of some other kind of work. In all of these the black is left and the white is cut away. The same tools and materials are employed. Hence, we teach that the white line is the natural expression of the wood engraver, and the reverse of pen drawing.

The specimens of drawings of ornament, wood carving, brass and iron work, sepia, crayon, charcoal and pencil drawings are quite up to any previous year in degree of merit, and reflect credit alike upon pupil and school, as well as on the gentlemen in charge of this department.

MODELING DEPARTMENT.

In charge of C. Leopold Fettweis.

The work in this Department is principally modeling in clay, as practiced in the various branches of decorative art. Some of the scholars have executed work of which an artist might be proud. It will speak for itself, and is creditable to the head of the department and to those whose hands, under his able instruction, produced the work.

Notwithstanding the circumscribed scope of our school, considering the limited time devoted to instruction and practice, the earnest boys and men, pupils of the school, have made extraordinary progress, availing themselves of all facilities and working assiduously, not only in school but many of them at home. Almost every trade and profession in which design or ornament is used, or applied to the mechanic arts, as, also, most every branch of business, had representatives in the school. The labors of the teachers have been arduous and they did not shrink from their task, but did their duty cheerfully and did it well. They deserve the thanks of the Institute, the scholars and the Superintendent of the school.

The scholars from the work shop, the store, the bank, all alike proved themselves

gentlemen, and to them I return my sincere thanks for their courtesy and uniform good conduct.

Respectfully submitted,

R. E. CHAMPION,
Superintendent.

The names of the several instructors have already been given in the above report by the Superintendent. The following members of the Board of Directors, comprised the Standing Committee in charge of the Industrial and Art School for 1887-'88. Messrs. William H. Stewart, A. B. Champion, and B. B. Dale.

The brief statements of the conditions of the school, which are made in the Annual Reports by the Board of Directors, close with reference for details to the full reports by the Principal. As the report for the session of 1887-'88, the first report made by the new Principal, Superintendent Champion, was given substantially in full; only a few extracts from his report for 1888-1889, will be here given.

The number of pupils enrolled was 506, distributed among the three general Departments as follows: Mechanical Department, 176, Architectural Department, 148, and Artistic Department, 182.

The introduction in three of the school rooms of electric lights, and the addition of new desks, giving sixty-three more seats, are noted; while the fact that one room was set aside for ladies, indicates a new departure as it is many years since there were any women pupils in attendance,—a large increase in their numbers is anticipated for the coming year.

The following interesting table showing the expenses of the school for six years, is given:

The following table shows the receipts and expenses of the school except heat and light for the last six years; also the cost and receipts per scholar.

Session.	Year.	Scholars.	Receipts.	Expenses.	Cost each scholar.	Receipt per scholar.
Twenty-eighth	1883-4	428	\$1,209.00	\$1,956.09	\$4.57	\$2.82
Twenty-ninth	1884-5	361	1,002.00	1,780.99	4.93	2.77
Thirtieth	1885-6	375	1,065.00	2,034.25	5.42	2.84
Thirty-first	1886-7	352	1,002.00	1,604.96	4.56	2.84
Thirty-second	1887-8	505	1,447.50	1,606.23	3.06	2.86
Thirty-third	1888-9	506	1,492.00	1,447.00	2.86	2.95

(The difference in receipts per scholar is caused by the number of free scholars each year.)

The Mechanical Department with its three grades is reported in good condition. In the Architectural Department the enrollment exceeded that of any previous year, and the work shows an improvement. Of the Artistic Department the principal says:

ARTISTIC DEPARTMENT.

The three grades of this Department were in charge of Major W. R. McComas, Mr. Valentine Bonhajo and Herman Weber, Esq., three gentlemen who are at the head of their profession in this city. In this Department is taught Free-hand Drawing, Perspective, Crayon, Charcoal, etc., designing for Carvers, Painters, Gilders,

Plasters and Sculptors, also original designing for the more advanced pupils in drawing, as applied to the manufacture of Ornamental Iron Work, Jewelry, Furniture, Silverware, Carpets, Wall and Ceiling Decoration, etc.

A larger number of scholars were enrolled in this Department than in any previous year, and a majority of the pupils were beginners—quite young, and in consequence their work will hardly compare with that which might have been shown had they been older, and more advanced in their knowledge of drawing. Still we think their work will compare favorably with that of former years. It is hardly within our province to make artists of our pupils, but our aim is to give them a practical knowledge of drawing, to educate them for some useful employment in which the art of design drawing is the principal or accessory occupation. Many examples of charcoal drawings will be seen among the work of the scholars this year.

* * * * *

Taking into consideration the time allowed for instruction the large number of scholars (182) and the limited number of teachers (3) this Department has attained a good degree of proficiency. This is particularly the case with the young ladies, who, having the advantage of soft hands and consequent delicate touch, (denied boys and young men fresh from their daily toil in factory and shop) have accomplished more in shorter time. To the credit of all it may be said “they have done what they could.”

The teachers have been prompt in their attendance and industrious to a degree. The scholars appreciated the labors of the teachers in their behalf and I am sure the members of the Institute will thank them for their good work. The scholars have been so industrious, so courteous, that it was a pleasure to be associated with them. To teachers and scholars alike I return my sincere thanks.

Respectfully submitted

R. E. CHAMPION,
Superintendent.

The report by Superintendent Champion for the Thirty-Fourth session 1889–1890, records an enrollment of 547 pupils, divided among the Departments as follows: “Mechanical,” 214. “Architectural,” 189. “Artistic,” 144.—A summary of the proportion of former pupils attending in the several departments is given as follows:

In the mechanical class were sixty-four who were with us last session; sixteen in their third year; four in their fourth year and one who had enrolled for his fifth year, or a total of eighty-five old scholars.

In the artistic class were fifty old scholars, viz.: thirty-three in their second year; fifteen in third; one fourth, and one in fifth year.

In the architectural class fifty-six enrolled for second time; seventeen third; three fourth, and one fifth, or a total of seventy-seven.

Total number of scholars previously enrolled, two hundred and twelve; new scholars, three hundred and thirty-five. The ages of scholars varied from eight years to thirty-eight years; four hundred and fourteen being under twenty-one.

There are no noteworthy changes recorded in the Mechanical and Architectural Departments of the Artistic Department, the Superintendent says:

ARTISTIC DEPARTMENT.

The subject of art education is important, inasmuch as art enters into the industries and is interwoven in a more or less degree with all manufacturing business. This branch of instruction is of the greatest importance to the artisan and prospective artist, and of great value to the architect and mechanical draughtsman.

We teach free-hand drawing, perspective, crayon, charcoal, water-color, designing, etc. In this department are lithographic crayon artists, engravers on stone, wood, metal, and watch cases; ceiling and wall decorators, carvers and cabinetmakers, plasterers, stone cutters, jewelers, ornamental ironworkers, model-makers, etc.

It is our object, so far as our influence extends over our students, to so direct their aims and aspirations that they will continue the studies begun and pursued to only a limited degree. We have much new and crude material with which to labor. A few make a success, occasionally an artist is developed and all are improved and instructed.

The elementary grade is composed of boys and young men in most every conceivable business and all grades of education and intelligence. Their work has been from simple copies in the flat, and many of them made remarkable progress, as will be evidenced by specimens of their work on exhibition.

The intermediate grade was composed of more advanced pupils and those who had attended the school the previous year. Many in this grade are learning a trade and seek to improve themselves and be better qualified for advanced positions in their several callings. The ladies of this class have done good work, and it is encouraging to all concerned, as it foreshadows the work of the future in this direction.

The work in the advanced grade was in charcoal, crayon and ink, from objects and casts. The students in this grade evidenced a desire to improve themselves in their several callings—most of them having already begun their struggle for life—in connection with the graphic arts, and are impelled by the admonition that there is ample room at the top of the ladder for those who are willing to work and strive. This department was in charge of Maj. W. R. McComas, Mr. Valentine Bonhajo and Mr. Herman Weber. The work of their pupils is an evidence that they were most attentive and industrious.

In the Mechanical Department the desirability of grading the less and more advanced pupils is urged. The report closes as follows :

In the summer of 1889 Mr. Walter Laidlaw, chairman committee on Industrial and Art School, visited many prominent schools in Europe, among them the City and Guilds of London ; Central Institute at South Kensington ; Technical College, Finsbury ; Masons' Science College, Birmingham ; Midland Institute, Birmingham ; the Birmingham and Midland Institute ; Birmingham Municipal School of Art ; the school of Messrs. Chance, Brothers & Co., Spon Lane ; the Science and Art School of Tangye Bros., Soho (who employ 4,000 men—having been poor boys they can appreciate the value of such a school and maintain this school for the benefit of their employes) ; Edinburgh University ; the Heriott-Watt College (the Mechanics' Institute of Edinburgh) ; the Glasgow and West of Scotland Technical College, on Bath street, Glasgow (this latter being the original Mechanics' Institute of Glasgow), and the Allen Glenn Training schools were visited, and Mr. Laidlaw has given your school the benefit of the knowledge gained by him and has spent much of his time in the school rooms, doing all in his power for the benefit of the pupils.

Provided with credentials from this Institute and from Sir James Douglass, M. I. C. E. F. R. S. and engineer-in-chief of the British lighthouses, Mr. Laidlaw was received with courtesy and kindness and shown much attention by the heads of all the institutions named above. He purchased some valuable copies in Europe and presented them to the school.

"A school where the son of the millionaire elbows the boot-black," says one of our city papers.

Surely this has been the case the past session, for we had boot-blacks, graduates of Yale, Harvard, and Cincinnati University. Students who employed large numbers of men here, to acquire the knowledge of mechanics ; architects in

search of the missing link in their earlier education ; artists who wished to practice under the experienced eyes of our teachers.

As anticipated, there was a decided increase in our classes for ladies, each of the departments being favored with their presence, and their work has been most excellent.

Additional electric lamps were placed in the school rooms (eighty-two in all) and changes made so that we can now accommodate over three hundred pupils each evening.

The discipline of the school was all that could be desired, and it is remarkable that with our large number of scholars such perfect order was maintained—not only in the school rooms but in entering and leaving the building. No words of praise can be too warm for the 547 pupils who were with us this winter, who appreciated the objects of the school and by their kindness made it a pleasure to teach them, to watch their progress. They have my sincere thanks.

The large number of pupils increased the labors of the teachers, and they are deserving of the warmest thanks of the members and all interested in the good work being done in our Industrial and Art School.

Respectfully submitted,

R. E. CHAMPION,
Superintendent.

As the report for the year 1890-1891, is probably the latest which can be admitted to the present volume, and as it contains certain interesting statistics showing the wide reaching usefulness of this school ; and, also, as it records the opening of a new Department, due to the interest taken by the Carriage Makers Club of the City ; in itself a significant movement in the direction of special trade schools and indicating the demand for the more thorough training of mechanics ; this report by Superintendent Champion is here given in full :

REPORT ON THE INDUSTRIAL AND ART SCHOOL OF THE OHIO MECHANICS' INSTITUTE.

Thirty-fifth session, 1890-1891.

OFFICE OF THE OHIO MECHANICS' INSTITUTE,
Cincinnati, April 1, 1891.

To the President and Board of Directors :

GENTLEMEN: I submit herewith the annual report of the department of the Institute known as the Industrial and Art School. The session commenced October 16th, 1890, and closed March 13th, 1891.

The school was open Monday, Tuesday, Wednesday, Thursday and Friday evenings, and comprised the following departments :

1st. *Mechanical.*—For Mechanical Engineers, Machinists, Metal-workers, Pattern-makers, Founders, Blacksmiths, etc.

2d. *Architectural.*—For Architects, Carpenters, Masons, Bricklayers, Wood-workers, Builders, etc.

3d. *Artistic.*—For Free-Hand Drawing, Perspective, Crayon, etc.; for Painters, Plasterers, Carvers, Cabinet-makers, etc.; including Instruction in Designing, as applied to the Manufacture of Furniture, Jewelry, Silverware, Ornamental Iron Work, Wall and Ceiling Decoration, Carpets, Oil Cloths, Lace and Damask Hangings, etc.

4th. *Practical Mechanics.*—Including such branches of Applied Science as relate to Construction.

5th. *Carriage Drafting.*—For Apprentices and Journeymen, including studies in Construction and Designing.

6th. *Mathematics*.—Arithmetic, Algebra and Geometry, for beginners and advanced pupils, chiefly to aid work in other departments.

The following statement shows the number of pupils enrolled in the several departments :

Mechanical	307
Architectural	191
Artistic	185
Carriage Drafting	27
Mathematics	10

Total enrollment thirty-fifth session 720

In class in mathematics there were enrolled, in addition to number given above, one hundred pupils who were members of other classes (making total enrollment in this class 110) and are not counted the second time.

The following table shows the number of pupils enrolled each session, during the thirty-five years since the organization of the school in 1856:

	Members
1st Session, 1856 and '57	52
2d " 1857 and '58	107
3d " 1858 and '59	156
4th " 1859 and '60	204
5th " 1860 and '61	221
6th " 1861 and '62	71
7th " 1862 and '63	76
8th " 1863 and '64	150
9th " 1864 and '65	178
10th " 1865 and '66	214
11th " 1866 and '67	287
12th " 1867 and '68	288
13th " 1868 and '69	285
14th " 1869 and '70	260
15th " 1870 and '71	225
16th " 1871 and '72	215
17th " 1872 and '73	234
18th " 1873 and '74	221
19th " 1874 and '75	223
20th " 1875 and '76	212
21st " 1876 and '77	157
22d " 1877 and '78	163
23d " 1878 and '79	220
24th " 1879 and '80	235
25th " 1880 and '81	279
26th " 1881 and '82	280
27th " 1882 and '83	364
28th " 1883 and '84	428
29th " 1884 and '85	361
30th " 1885 and '86	375
31st " 1886 and '87	352
32d " 1887 and '88	505
33d " 1888 and '89	506
34th " 1889 and '90	547
35th " 1890 and '91	720

Total enrollment since organization 9371

The above is an evidence that your field of usefulness is widening, and that you are to the fullest extent carrying out the intentions of the noble founders of the Institute.

In the mechanical classes there were seventy-three pupils who enrolled for the second year, thirty-three for their third term, ten for their fourth year, one for his fifth, one for his sixth term and one hundred and eighty-nine enrolled for the first time.

In the architectural classes fifty-five enrolled for second time, fifteen for third term, eight for fourth year and one gentleman has been with us for the past seven sessions. In this class there were one hundred and twelve pupils who entered for first year.

In the artistic classes thirty-eight enrolled the second time, eleven for their third term, five for fourth, one for fifth and one hundred and thirty enrolled for their first term.

The members of classes in mathematics and carriage drafting were new pupils.

Total number of new pupils enrolled, four hundred and sixty-eight; pupils who had enrolled previous sessions, two hundred and fifty-two.

The ages of our pupils varies from seven to forty-seven years, five hundred and thirty-nine being under twenty-one. Of this number one hundred and eight are eighteen years old and two hundred and eighty-one between the ages of fourteen and eighteen.

One hundred and eighteen trades or occupations were represented in our school, machinists and carpenters predominating, there being one hundred and sixty-five of the former and seventy-six of the latter.

The following shows in detail the branches of business represented in the school the thirty-fifth session:

Trade or Occupation.	Mechanical Class.	Architectural Class.	Artistic Class.	Carriage Drafting Class.	Class in Mathematics.	Total in Class.
Architectural Iron Works		3	2		1	6
Advertising Agent	1					1
Artist	1					1
Augur Maker	1					1
Architect		2				2
Blacksmith	2		1			3
Bell Boy			1			1
Book-binder			1			1
Basket Maker		1				1
Boat Builder	1	1				2
Boothblack	1					1
Book-keeper	3	2	3	1		9
Brass Founder	3					3
Brass Finisher	5					5
Bank Messenger		1				1
Bridge Builder	1					1
Bricklayer		15				15
Carpenter	1	75				76
Cabinet Maker			8			8
Carpet Cutter			1			1
Correspondent	1					1
Clock Maker	1					1
Carriage Maker	1		2	14	1	18
Carriage Trimmer			1	1		2
Carriage Painter			1	3		4
Children's Carriages		1				1
Car Painter			2			2
Cashier		1				1
Cash Boy	1		1			2
Chair Maker	1					1
Civil Engineer	3	1			1	5
Clerk	20	8	10	4		42
Collector			1			1
Cornice Maker	1	5				6
Dentist	1					1
Designer			1			1
Draughtsman	7	5	6			18
Driver	1		1			2
Electrician	1	1			1	3
Errand Boy						1

Trade or Occupation.	Mechanical Class.	Architectural Class.	Artistic Class.	Carriage Drafting Class.	Class in Mathematics.	Total in Class.
Electrotyping.....		1				1
Engineer.....	5					5
Engraver.....	2		10			12
Engraving Watch Cases.....			2			2
Finisher.....		1	1			2
Fireman.....	4					4
Florist.....			1			1
Farmer.....	1					1
Fresco Painter.....			2			2
Gas Fitter.....		1	1			2
Glazier.....			1			1
Horse Collar Maker.....	1					1
Instrument Maker.....	1					1
Insurance Agent.....			1			1
Iron Worker.....	3		1			4
Japanning.....			1			1
Joiner.....		1				1
Jeweler.....			4			4
Laborer.....		1	1			2
Lithographer.....	3		10			13
Lumber Dealer.....		1	1			2
Locksmith.....	1					1
Metal Pattern Maker.....			1			1
Meter Maker.....			1			1
Machinist.....	162	1	2			165
Manufacturer.....	1					1
Messenger Boy.....		1				1
Music Dealer.....		1				1
Molder.....	1		1			2
Metal Worker.....	3					3
Optician.....			1			1
Office Boy.....	4	1	1			6
Press Feeder.....		1				1
Policeman.....	1					1
Painter.....		2	7			9
Pattern Maker.....	21		1			22
Planing Mill.....		1				1
Plasterer.....		1				1
Produce Dealer.....		1				1
Plumber.....	4	6				10
Printer.....		2				2
Plater.....	1		4			5
Purchasing Agent.....				1		1
Press Feeder.....	1					1
Photographer.....			1			1
Packer.....			2			2
Picture Framer.....			1			1
Rolling Mill.....	1					1
Railway Clerk.....					1	1
Range Maker.....	1					1
Salesman.....		1				1
Saw Maker.....			1			1
School Teacher.....	1		5			6
Shoe Maker.....	1	1	2			4
Stair Builder.....		5				5
Stenographer.....		2	1			3
Stone Cutter.....		7	3			10
Student.....	14	20	31	1	1	67
Student Cincinnati Art Academy.....	1	2	2			5
Stock Keeper.....			1		1	2
Surveyor.....	2					2
Stone Mason.....	1					1
Superintendent.....				2		2
Safe Maker.....	2	1				3
Saddler.....			1			1
Stamp Cutter.....			1			1
Sign Writer.....			1			1
Soap Manufacturer.....	1					1
Tailor.....			2			2
Tobaccoconist.....		1			1	2
Tool Maker.....	1					1
Telegraph Operator.....		3			1	4
Tinner.....						
Type Writer.....	3					3
Upholster.....	1					1
Wood Carver.....			3			3
Wood Turner.....			3			3
Watch Case Maker.....	1					1
Totals.....	307	191	185	27	10	720

MECHANICAL DEPARTMENT.

INTRODUCTORY.

Drawing is of three kinds : Representative, Decorative and Constructive.

Representative drawing shows objects as they appear to the human eye. Decorative drawing treats of ornamenting them ; both produce pictures which are universally intelligible. Constructive drawing illustrates objects as they are, or as they are to be made, regarding the interior, as well as the exterior. It prescribes precisely the geometric form, gives the accurate dimensions of every detail of the object, traces the paths of points of parts which are in motion, and prescribes what materials are to be used for the different elements.

The principles of constructive drawing are variously applied to suit different subjects, or the need of different craftsmen—architects, engineers, ship-builders, machinists, etc.

In the *Mechanical Department* of our school we teach constructive drawing as applied to machine design, and to the needs of machine construction.

Mechanical drawing, or constructive drawing, in general, is, indeed, the medium between thought and execution ; by it alone can the genius of conception convey its meaning to the skill which executes, or suggestive ideas become living, practical realities.

If we omit consideration of those forms and details which may be described in a few words, constructive drawing becomes the only means of communication between the designer and the workman—the only method of conveying ideas.

The knowledge of this art has become an absolute necessity, not only for the engineer, draughtsman or designer, but also for every machinist, pattern-maker, blacksmith, boiler-maker, and for every other artisan or mechanic, who is connected with the useful arts.

The one must understand *drawing* ; the other must understand *drawings*.

Independently of its utility as a precise art, constructive drawing really interests the student, while it instructs him. It instills sound and accurate ideas into his mind and develops his intellectual powers.

Constructive drawing is not as intuitive as representative drawing. A complicated but well executed mechanical drawing will appear to one not educated in the art as a chaos of lines.

In mechanical drawing, mathematical instruments are used to determine form and size, and the use of such instruments requires a certain amount of manual training.

Mechanical drawing proceeds upon certain conventions, is based upon the principles of Applied Geometry, and some knowledge of these are required to understand it.

For *designing* machinery acquaintance with the various branches of mathematics, physics and mechanics is also required.

For years it has been the special endeavor of our school to distribute the knowledge of the useful and noble art of mechanical drawing in a popular and practical manner.

In the *Elementary Grade* the pupils receive a manual training ; they are instructed in the handling and the use of the instruments of precision, and drilled in measuring accurately, and in making sharp, clean and distinct lines. The exercises in this grade consist of drawing plans, elevations and sections of simple machine parts from the flat in pencil and in ink. The objects have been selected from modern machinery. At the same time the pupils are introduced into the conventions of the orthogonal projections, and such geometrical constructions, which are frequently applied in mechanical drawing, are demonstrated.

While, in the elementary grade, our main point in view is to enable the pupils to

acquire the manual skill and a dexterity in operating with T-square, triangle, compass, pencil and drawing-pen; in the *Intermediate Grade* it is our aim to teach the pupils "how to draw orthographically." For this purpose the scholars are made familiar with the rules and principles of Applied Geometry in a practical manner, and required to draw rectangular and oblique projections of simple solids, such as prisms, pyramids, cylinders, cones, etc.}

The pupils of this grade are also taught to make free-hand sketches from actual machine details, or to copy such sketches from the black-board, with all dimensions figured and then to make working drawings in scale from their sketches, and finally to assemble the details in a general plan of the whole machine.

The students of the *Advanced Grade* are advised in the rudiments of machine design. During the past session, the special subject of study was: "The strength of materials practically considered" and applied to gearing or to parts transmitting motion, and formed a continuation of the study of the previous session.

The analytical method of teaching was adopted. The instructor propounded a problem, and, by analyzing the same, he ascertained what he had to teach, and to explain, in order to enable his pupils to answer all questions the problem evolved.

It was often necessary to treat on sections of mechanics and the various branches of mathematics.

The drawings made by the students in this grade during the past session are not numerous, but every dimension of the details these drawings represent has been computed and thoroughly considered by the pupils themselves, and the knowledge they acquired during the last winter will be of constant value to them.

The pupils of the Mechanical Department were industrious and highly interested in their studies.

The Elementary Grade was in charge of Mr. Frank J. Roth and Mr. James C. Steen, the latter succeeding Mr. Frank L. Millward, whose failing health compelled him to resign the position he so ably filled.

The Intermediate Grade was in charge of Mr. Garrett Simpkinson and Prof. Ernest Lietze presided over those in the Advanced Grade. Three hundred and seven pupils enrolled in this department—an increase of ninety-three over previous session, and in consequence the labors of the teachers were increased and more arduous.

ARCHITECTURAL DEPARTMENT.

The work in this department the past session has been most encouraging, and interesting to the pupils. The same plan of instruction, as maintained in the past, has been followed, and several new features were introduced and have been a success—as will be shown by the general improvement in the work—considered both from a practical and artistic point of view.

At the close of the thirty-fourth session Mr. H. E. Hannaford was compelled by business reasons—and much to his regret—to retire from the position so ably filled by him for a number of years, and Mr. Louis G. Dittoe was in charge of the Advanced Grade the past session.

The work of this grade consisted principally of practical detailing of frame and brick houses, the classical orders of Architecture, and original designing. The work done by the pupils in this grade, will, we think, be ample evidence that the system of instruction maintained by the Institute is the proper one and is a success.

The Intermediate Grade was in charge of a most competent gentleman, Mr. Geo. S. Werner. The course pursued in this grade consisted of the drawing of plans and elevations of a number of well arranged, modern houses—of different styles—with all explanations necessary—so that the pupils thoroughly understood their work, all the principal points in house planning.

The Elementary Grade was in charge of Mr. Arthur Stedman and Mr. John Zet-

tel—the latter taking the place of Mr. Dittoe. Nearly all the pupils in this grade enrolled for the first time, and the large number of ambitious gentlemen kept their teachers very busy.

The course of instruction in this grade was the same as previous session and consisted of the most practical problems in Geometry, Drawings in Isometrical Perspective and Simple Projections. Much good work was done by the pupils in this class, and the work of the department has been most satisfactory.

ARTISTIC DEPARTMENT.

The enrollment of this department was much in excess of any year since establishment of the school.

As usual, it was divided into three grades which were in charge of Messrs. W. R. McComas, Valentine Bonhajo and Herman Weber.

The instruction given is, as far as possible, practical, and is intended to aid the pupils in the trade or profession they have chosen or are pursuing—for, with few exceptions, our pupils have commenced the struggle of life and manifest a disposition to improve the opportunities afforded by the Institute of securing a knowledge which will aid them in their several callings.

In this department alone are represented all the trades to which knowledge of the graphic arts is applicable and all seemed anxious to obtain a degree of proficiency in designing and sketching, which would enable them to put their work in form, on paper, before commencing its execution. In other words, to become designers in their several branches.

Some of the pupils have manifested an unusual degree of intelligence and pursued their studies on an evidently well considered plan, the prosecution of which will surely bring fruitful results.

Although the pupils were most industrious, the evidence of their labors may not be apparent in finished work for the reason that a majority of them enrolled for their first year, and in addition the large number of pupils compelled us to put desks in the room devoted to object drawing, thus curtailing our facilities in that line.

The ladies' class is gradually increasing and it is most gratifying to note the degree of proficiency attained by them.

The work which will be shown at the closing exercises of the school is selected as giving the best idea of the proficiency attained and comprises specimens of the various branches taught.

The large number of scholars in this department kept the teachers very busy, and in future—in order to do justice to our pupils—we should have another teacher in the Artistic Department.

CARRIAGE DRAFTING DEPARTMENT.

The opening of a special class in carriage drafting is something of a departure from previous ideas governing the course of the Institute; but the carriage industry is one of such magnitude in this city, and the methods employed in making drawings for carriages so essentially distinct from those employed in other lines of mechanics, that it was deemed wise to afford the means for such instruction, at least for one season for an experiment.

The school numbered only one from the ranks of carriage makers among its pupils the previous year, but this session twenty-seven were enrolled in this department, all of them being actively engaged in the business and constituted one of the best and most intelligent classes in the school, a degree of success of which we may feel proud has thus been accorded in number of pupils, and the quality of the work which has been done.

The active interest which Mr. David W. Miller, editor of *The Carriage World*, and member of the Institute, has taken in this matter, in getting the carriage makers' club of this city to use its influence in favor of the class, and in using the columns of his journal to awaken a general interest is responsible to a large degree for the formation of this class, and has caused it to attract attention from the carriage trade throughout the United States.

At his suggestion also, Mr. Howard S. Miller, draftsman for the Geo. C. Miller Sons' Carriage Co., and a former pupil of the New York Technical School for carriage builders, also of the Dupont School for carriage builders, Paris, France, was secured as instructor.

The advance made the first year has been very gratifying, and as the class progresses additional room, if needed, will be furnished, and facilities for full size drawings afforded.

Instruction in some of the more abstruse technical points will be given, and in every way as complete a course formulated as will be advisable and compatible with the interest shown by the membership from the carriage industry.

To stimulate interest, *The Carriage World* offered a prize of ten dollars to the pupil in this class who made the best draft during the past session, and Mr. D. W. Miller promises to arrange for the exhibition of the work of the pupils, at the annual convention of the Carriage Builders' National Association, which meets in this city in October, 1891.

The advantages of a clear knowledge of the difficult problems involved in carriage construction, and of ability to properly represent by exact drawings all the parts which enter into a carriage in the course of its construction are recognized by all intelligent carriage builders, but in these days of division of labor and duplication of parts, the knowledge required for the practical all round carriage maker has begun to be felt as a scarce article. Hence one who by proper education has fitted himself for the necessary acquirements may find himself in demand and his services valuable.

To plan is one thing, to plan accurately and to make drawings of all parts of a whole carriage is quite another thing. One capable of this, with a knowledge of the working possibilities of material, can occupy the position of superintendent of a factory, which he would be incompetent to fill without such knowledge.

It is evident that the importance of this class will grow as its results are shown in the pupils.

DEPARTMENT OF MATHEMATICS.

It was the intention to devote two evenings each week to mathematics, but on account of the large number of pupils enrolled in other departments, we were compelled to abandon the Monday night exercises and becontent with two and one-half hours each Wednesday evening.

The course of instruction was similar to that pursued the previous session, *i. e.*, the study of arithmetic—particularly as applied to mechanical and architectural work. The fundamental rules of arithmetic were taught, fractions, decimal and common, algebra and geometry were considered.

Mr. F. M. Youmans again had charge of this department, and his one hundred and ten pupils kept him very busy. The thanks of all interested are due him, for his labors were most severe. By the aid of a system of charts prepared by him, much ground was covered and a large amount of work was done, but the time was too limited to fully carry out our plan of instruction, and it is hoped that in the coming years, we will be enabled to furnish better facilities for this department.

The thanks of all interested are due the Committee on Industrial and Art School, and especially so to Mr. Walter Laidlaw, chairman, who not only gave the school his zealous and constant attention, but donated, for use of pupils, many valuable models and parts of machinery.

The President of the Institute was also a regular visitor, and has given the school constant thought and attention.

The number of ladies enrolled exceeded that of former years, the mechanical, architectural and artistic classes being graced by their presence.

In every department of the school the work has been thorough, honest and excellent. The work of the teachers has been most creditable. Their labors were excessive and they are entitled to the warmest thanks of all friends of the school.

It is a matter of surprise that so much, and such uniformly good work can be produced in so short a time, but it is made possible by our efficient corps of thoroughly competent teachers and a system of instruction and facilities for study which arouses the ambition and stimulates the interest of our pupils in their work.

That the kindness of the members of the Institute in maintaining the school is fully appreciated is shown by the constantly increasing number of pupils—their uniform good conduct and the earnestness with which they attend to their work. The worthy and industrious gentlemen who have been associated with me in the school work the past session have my sincere thanks for their uniform kindness, courtesy, and above all, for their *hard work*.

Seven hundred and twenty pupils: And so pleasant and courteous were they that my heart goes out to them in thanks and gratitude. Their perseverance and patient, faithful energy will surely bring them success and happiness in the future. May a kind Providence bestow his choicest blessings upon them.

Respectfully submitted,

R. E. CHAMPION,
Superintendent.

A letter from Superintendent Champion, under date of December 11th, 1891, gives the following information in regard to the School.—He says:

* * * “You will notice that we have a peculiar school. Our motto is:

We live for those who need us,
For the good that we can do.”

And we live up to it. If a pupil has three dollars to spare for tuition we accept it. If it is some poor boot black, who does not know where he will get his next meal, but who is ambitious, etc., we welcome him, free of charge, and care for him as well as though he was worth a million.

Many young men and women from the wealthiest families in the city attend our school and perhaps at the same desk will be boys who are not sure of a bed for the night, after school has dismissed. All are welcome, black and white, poor and rich, but while under our roof they *must* be gentlemen, for our discipline is perfect, and we never have the slightest trouble.

This winter we have 18 teachers and 832 pupils. Next year we can take care of 1200 pupils and we have several new departments and propose to give poor boys, who have not been to school, the rudiments of an education.” * * *

Very truly yours,

R. E. CHAMPION,
Sup't.”

Since the above was in type the 64th Annual Report for the year ending in April, 1892, has been received; and bears ample evidence of the growing prosperity of the Institute. President Allison, says in his report, that it has been a year of unexampled prosperity. He attributes the continued growth and success of the school to “the indefatigable efforts and watchful care of the courteous and efficient

superintendent." The Board of Directors report the Institute as out of debt; with an investment made during the year of \$2,000, making \$8,000 in all, in Avondale 5 per cent bonds. The Institute has a fund amounting in all to \$18,000. The building has been put in perfect repair during the year. Superintendent Champion, reports an enrollment of 845 pupils; being an increase of 125, over the year previous. From a full report in the "Merchant and Manufacturer," of April 23rd, 1892, it appears that the exhibition of pupils' work, and the annual commencement exercises, took place on April 14th, 1892, and attracted a brilliant audience. The newly chosen President, Mr. James Leslie, "paid an eloquent tribute to the retiring President, Mr. James Allison," who had relinquished his post to take charge of an important department of the coming World's Fair at Chicago. Wm. H. Stewart, Esq., read the usual reports by the officials, and Hon. Thomas McDougall, delivered the annual address. His topics were: (1) Cincinnati as a Manufacturing City. (2) The Necessity of Educated Mechanical Skill, and (3) Better Homes for Working People. In treating the last topic, the eloquent orator startled his audience by asserting that the working people of Cincinnati have poorer homes than those of their class in any other American city; he then proceeded to point out the way in which this condition could be effectively remedied. Rev. W. H. Warren, awarded the special prizes. With this brief summary of its latest report, the history of this interesting voluntary Educational Association, must close.

At the election on the 12th of April, 1892, the following officers were chosen for the ensuing year:

President—James Leslie.

Vice President—Walter Laidlaw.

Secretary—Wm. H. Stewart.

Treasurer—Geo. M. Clark.

Directors—Harvey E. Hannaford, David W. Miller, P. G. March, William Griffith, A. B. Champion, Chas. L. Wiltsee and Robert Kirkup.

CHAPTER VII.

THE CINCINNATI TECHNICAL SCHOOL, CINCINNATI, OHIO. EVENING DRAWING CLASSES IN THE CITIES OF CHICAGO, ILLINOIS; COLUMBUS, OHIO; AND ERIE, PENNSYLVANIA.

The Technical School of Cincinnati—Suggestions, that the former movement by the Board of Directors of the Ohio Mechanics Institute, in favor of Technological Training and Manual Training, prepared the public to give support to this new school—Incorporated July 27th, 1886—Letter from Superintendent Carothers on the use of the name "Technical"—Historical sketch from First Annual Report—Committee of the Order of Cincinnati, reports in favor of incorporating this School—First Board of Directors elected October, 25th, 1886—List of Board—School opened with only three pupils; attendance only eighteen at end of first year—Pamphlet containing addresses delivered at the closing exercises of the first year of the School—Extracts from address by Hon. John Tehrenbach—The need and utility of definite technical knowledge briefly illustrated—Address by Professor Thomas Norton—Striking analysis of public school attendance in Cincinnati, showing that only fourteen out of every thousand children who enter the lowest primary schools, ever complete the high school course—That is, only fourteen out of every thousand school children in Cincinnati, continue to attend school for twelve consecutive years—Extracts from Professor French's address on the relation of Manual Training to Mental Training—Extract from address by Ex Superintendent of City Schools, Dr. John B. Peaslee—The importance and value of a technical school—Sixty-four pupils reported in attendance during second year—Commercial Club of Cincinnati formally endorse the school in November, 1887—Individual members had, before, freely contributed to its support—Extracts from prospectus of school published 1886-87—First Annual Catalogue issued February 1888—Details of conditions of admission and programme of courses of study—Proposed Department of Domestic Science described—Equipment of wood-working shops—Theory of shop instruction stated—General plan of school—The new forms of training and their educational value, discussed at length by Mr. George R. Carothers, Superintendent of the School. Addresses at closing exercises of second year, June 13th, 1888—Extracts from address by Colonel William L. Robinson, President Board of Directors—Address by Superintendent George R. Carothers—Interesting history of the early struggles of the School—Quotes Emerson on Self-Reliance—Claims four pre-eminent advantages for Hand Training—Arguments of opponents of Manual Training considered—Value of physical training for girls, as well as boys—Address by Rev. George A. Thayer—The School at Toledo, commended—The importance of Industrial Art Training to the country, emphasized—The value to the inventor, or working mechanic, of this ability to develop his ideas and plan in drawings—The plan grows and is perfected just as the author's rough draft is likewise polished and developed—He refers to the master of the art of wood-carving, Mr. Fry, whose exquisite works have given fame to Cincinnati—The rooms of the school in Music Hall were occupied with exhibits during the "Centennial Exposition," 1888, and the school was opened temporarily in one of the district school buildings—Mr. Carothers resigned in July, 1893—Mr. J. R. Klemm, Ph.D., appointed

Principal of the School in August 1888—The Commercial Club raised a large fund for the school—Fifty thousand dollars ultimately contributed—A new Board of Directors chosen—Report of the Principal, December 1st, 1888—Details of attendance and of studies—List of Instructors—Board of Trustees' report for 1889-'90—Professor L. R. Klemm resigning, Mr. James B. Stanwood was appointed Director—The Catalogues for two following years show increasing number of students—Number for the year 1891-'92 is 152—Equipment of shops largely increased—Sketch of a boys' school life in the Technical School—List of Trustees and Faculty—Free Evening Drawing Classes in other cities—Evening High School, Chicago, Illinois—Illustrates a group of schools, in other cities and towns, similar to the Free Evening Drawing Schools established by law in the larger towns and cities of Massachusetts—Opened by Chicago Board of Education in 1874, for free instruction in Mechanics and Mechanical Drawing—Open five evenings each week—Thirty eight pupils attended the first session—Professor H. H. Belfield, Director of the Chicago Manual Training School, formerly in charge of the Evening High School, furnishes historical data—No drawing taught in evening schools of Chicago till 1868—Introduced by Dr. Selim A. Peabody, present Regent of Illinois Industrial University—(1884)—The great Chicago Fire of 1871, ended these evening schools—The Evening High School reopened in 1874, still in charge of Dr. Peabody—Mr. Brownell succeeded Dr. Peabody in October 1878, and Mr. Henry H. Belfield assumed charge in October 1881—Mr. Oliver H. Westcott succeeded in October, 1883—The school of value to the pupils—Supported by direct appropriation of the City Council—Two late presidents of the School Board, for some unknown reason, wish the discontinuance of the school—Free Evening Industrial Drawing School, Columbus, Ohio, opened November 1874, by Board of Education—Drawing put in day schools same year—Seventy five pupils attended evening schools; twenty-five were ladies—Extracts from Annual Report, by City Superintendent R. W. Stevenson for 1874-75—Professor W. G. Goodnough, Superintendent of Art Education in City Schools, was appointed teacher—Details of course of studies—Statistics of pupils occupations—The School commended—Extracts from Professor Goodnough's Report as Master—Want of suitable accommodations—Pupils work exhibited at end of season—Attracted much interest—Second year—One hundred and seven pupils, in all; thirty eight women—The Board of Education opened no evening schools during the winter of 1876-77—Columbus Art Association opened in autumn of 1878—An Art School opened by this Association, January, 1879—An evening drawing class, with a tuition charge of ten cents per night, opened—This, with the fact that drawing had been put in all the public schools, led to the final abandonment of the City evening drawing School—Free Evening Drawing School, Erie, Pennsylvania, organized by city School Board in October 1873—Mr. H. E. Luding in charge—Eighty two pupils attended, only two of whom were women—Exhibition of Scholars' work, held in 1875—Superseded by the Board in 1884, by opening the day and evening Mechanical Drawing School—Superintendent Jones, of Erie, reported in 1889, the success of this school, and its practical operation—Mr. George Zwilling in charge as Principal.

THE TECHNICAL SCHOOL OF CINCINNATI, OHIO.

In the preceding history of the Ohio Mechanics' Institute, and the school attached to it, the trend of a general movement in favor of both technical education and manual training, is clearly discernible. The modification of the instruction given in the school of the Institute; the talk about founding a manual training school; the reports on Technological education and the recommendations made by the

joint committees of the Institute, and of several other bodies, to devise a plan for founding a school of Technology; the several changes in the name of the Institute school, all bear witness to the impulse toward some changes and additions to the usual educational facilities which were moving the community to action. The community, however, had not, as yet, arrived at a definite knowledge of its own wishes, or any clear conception of how they were to be secured.

Dissatisfaction and impatience with the existing situation was general, but a working plan had yet to be evolved.

In view of these phases of its evolution, as set forth in the previous chapter, the Ohio Mechanics' Institute may be recognized as the direct precursor of the school now about to be described, though the promoters of this school and Mr. Carothers, the moving spirit of its existence, may never have suspected any such relation between the two institutions, and would very possibly, resent any such suggestion. Indeed, the history of the small beginnings and struggling existence of this experimental school, during the twelve months following its opening, would very probably have led the Board of Directors of the Ohio Mechanics' Institute, to disavow any possible remotest connection between the two.

Still, in perusing the histories of the institutions, and in view of the support finally given to the Technical school through the Commercial Club, it seems very clear that the preliminary education of the public, arising from the various efforts which originated with the Board of Trustees of the Mechanics' Institute, to establish a similar school in coöperation with other organized bodies of citizens, prepared the way for the public interest which has, at last, been taken in this struggling experimental school. The direct model of this school, is primarily, the school under the care of Dr. Woodward, in St. Louis, and secondly, the Toledo School. The girl pupils, and the proposed department of Domestic Science, etc., plainly showing the influence of the Toledo example.

This is, perhaps, the most recently established school which may eventually be classed with the several Manual Training Schools, grouped in the following chapters; though, as will be seen in the extract from Principal Carothers letter, it differs from these in some respects and is, as yet, by no means so fully developed in all departments. The main purpose and the methods of the schools are however analogous.

"The School occupies rooms in the south wing of the great Music Hall Building, which is on the corner of Fourteenth and Elm streets, fronting on Elm." Ample accommodations are here available for a very large number of scholars, if the attendance shall render such increase of facilities desirable.

The Technical School Association of Cincinnati, was incorporated

July 27th, 1886, with a capital stock of \$5000.00; in one hundred shares of \$50.00 each. Its resources are mainly from the donations of citizens interested in the movement. It is in a fair way to become self sustaining."

The Historical sketch which follows is taken from the First annual catalogue. At the close of the first year of the school, addresses were made by several leading educators and citizens; which were afterwards published in pamphlet form from which extracts will be given.

The rapid growth of the school, doubtless in large measure due to the publicity thus given to its purpose, is seen in the fact that the second year showed a total of sixty pupils; while at the opening the first year, there were only three in attendance, and only eighteen in all during the first year.

The following reply to a query in regard to the name of the school,—which it will be seen follows English rather than American precedent,—is given in a letter recently received from Principal Carothers, who says:

We call our school a "Technical School" because that is the correct name for it. The meaning of "Manual Training" as I find it in Webster's dictionary, is first; Pertaining to or performed by the hand and second to teach and form by practice.

The various meaning of the word "Technical" as we use it are as follows: To bring forth, to produce—Of, or pertaining to the useful or Mechanic Arts. Specially appropriated to any art, science, or business.

All honor to Dr. Woodward, but I do not think that he selected the most appropriate name for his school.—(I am a graduate of it.)

I do not wish to assume too much, and it is a thing which I do not frequently say, but I do claim a difference between the plan of our school and those of the St. Louis, or Chicago schools, in this; The entire course of this school is designed to be progressive, step by step, as a *unity*. The course of each department is laid and to harmonize as closely as possible with the work of the others. The mental work is not put above the technical or, vice versa, each are on an equality in determining the rank of a pupil. The objective point in our work being an institution of applied science in which the study of *English* language and literature is necessary to have the scheme of education we propose to give, complete. As some of our pupils wish to go on through the University or Polytechnic course, German or French, for them, take the place of English four times a week for two years.

We do not wish the impression to go abroad that we have a trade school, or that we have simply a high school, in connection with which is a drawing school and a school of tool instruction, which have no immediate connection other than in being under the same corporation in control; but that here, these different branches or lines of work are so closely united that they form a "Technical School."

(Pardon the multiplicity of words on this subject, but I have a great many inquiries similar to yours, and should you publish this in your forthcoming work on industrial schools it will answer a great many more, before they (the inquiries) are made of me.

The fact remains, however, that so long as the term "Technical," is retained as a distinctive appellation of the superior schools of applied sciences in this country, the use of it by an elementary school of applied science must lead to ambiguity.

The following is from the First Annual Report.

HISTORICAL SKETCH .

The need of a Technical School in Cincinnati, had been felt for some years and was the subject of serious thought with a number of our public-spirited-men—among whom were M. E. Ingalls, Julius Dexter, John V. Lewis, Major L. M. Hosea and others—who had from time to time been calling attention to the desirability of establishing such a school.

However no definite results came of these deliberations until at a meeting held by the Order of Cincinnati, July 8, 1886, a committee was appointed to investigate the subject and the feasibility of organizing a Technical School.

The members of that committee were Col. Wm. L. Robinson, Adolph Pluemer, Wm. F. Gray, "and such other citizens as they may select.

The committee making a favorable report, an association was formed and incorporated under the laws of the State of Ohio, July 27, 1886, under the name of "The Technical School of Cincinnati."

The Association completed its organization October 25, 1886, by electing a board of fifteen Directors."

The following were the members of the first

BOARD OF DIRECTORS:

Wm. L. Robinson, President.

H. T. Procter, H. C. Ezekiel, Vice-Presidents.

Adolph Pluemer, Treasurer.

Thos. J. Gaff,
A. W. Osler,
M. E. Ingalls,
Stewart Shillits,

H. P. Boyden,
Julius Dexter,
Wm. F. Gray,
H. Goepper,

A. M. Dolph,
P. McAvoy,
Jno. S. Woods.

Geo. R. Carothers, Secretary.

The school was formally opened for the admission of pupils November 1, 1886, in the Art Rooms of Music Hall. The practical work of the school began on the fifteenth day of the month with a class of *three* pupils, and closed the year, June 22, 1887, with eighteen.

The following extracts from addresses are taken from the pamphlet* referred to.

The addresses began with that of the Hon. John Fehrenbatch, who dwelt on the need of thorough scientific training in all the industrial and mechanical arts. He spoke as follows :

LADIES AND GENTLEMEN: There is no longer any system in our workshops whereby our boys can be educated in the arts, sciences and mysteries of mechanical industries. The absence of any regular apprenticeship system in the various mechanical callings is responsible for the alarming amount of technical ignorance among the great mass of our mechanics. If no remedy is provided the American mechanic will soon take second place in the field with his European competitor.

*Technical Education. Extracts from addresses delivered by Hon. John Fehrenbatch, Prof. Thomas Norton, Prof. Thomas H. French, jr., and Dr. John B. Peaslee, in Cincinnati, O., June 22, 1887, upon the occasion of the closing exercises of the Technical School of Cincinnati. Pp. 22.

Intellectual and scientific mechanism is no longer taught in the workshops of our country, but muscular mechanism has been substituted in their stead. This is a lamentable state of affairs and calls loudly for a remedy. Take my profession, for example, mechanical engineering, a calling in which are many of the brightest mechanical intellects in our country, and yet there is a woful lack of intellectual and scientific knowledge among the members of the profession. Go into a steam boiler shop and ask the journeyman boilermaker the thickness of plate required for a boiler of a given diameter, given tensile strength of material, to carry a given pressure with safety, and in nineteen cases out of twenty you will not get the information.

* * * * *

This is due to the fact that few indeed know anything of the important science of geometry. Knowledge in this important branch of science is no longer acquired in the boiler shop; but here, it is, and the student can be taught how to apply it to the various mechanical trades. It is of the utmost importance, aye it is absolutely indispensable, that the student should receive the most thorough and careful instruction in arithmetic, algebra, geometry, trigonometry and all the higher branches of mathematics and how to apply the knowledge thus obtained practically to the various mechanical trades.

He then shows the need of scientific knowledge in the moulding of iron, the manufacture of steel, and in the machine shop.

And here, too, you will find a lamentable lack of knowledge in the arts and sciences of the trade. Machinists are no longer educated in the shop, in their stead we have the 'lathe-hand,' the 'planer hand,' the 'vise hand,' etc. In the days when I learned the trade a machinist was a man of some importance in the community, a man of some standing. But what is he to-day? As a mechanic he has no exalted position in society. Whatever eminence he attains among his fellows he attains, not on account of any skill he may have acquired in the shop, but on account of his knowledge of the science, arts and mysteries of his trade acquired outside of the shop, as there they are no longer taught.

This the speaker strikingly illustrated, following it by a similar statement as to the Engineers in charge of steam engines. He closes this with an urgent plea for schools of this class where such instruction can be given :

I have endeavored in a brief and practical way to show the need of a technical school in our city and State—a school where the student is taught how to apply his knowledge to the various branches of mechanical industry. To enable the student to make a practical application of his knowledge to the mechanical arts he must be familiar with the laws and rules governing scientific and intellectual mechanism. I could give a great many illustrations to prove the correctness of this assertion, but one additional example will suffice. What area of opening will a bevel seated valve of a given diameter, of a given lift (less than the depth of the seat) produce? Let the graduate of any school or college, be never so well informed in all of the various branches of mathematics, and ask him this one simple question in the science of steam engineering; and if he has not been taught how to apply his mathematical knowledge in that direction he can not answer the question.

I think it has been demonstrated that in the present condition of the various branches of our mechanical industries, with no system of apprenticeship in our workshops whereby apprentices can learn the arts and sciences of their trades, a school such as you have here, should be founded by the State, and made a part of its educational system. It is of the utmost importance to the material wealth and prosperity of the State and Nation, that our mechanics be thoroughly trained in the

intellectual and scientific, as well as the practical branches of mechanical industries. Under our present system of free education when the scholar has graduated from the high school he is not qualified to pursue any professional or mechanical calling, but must devote an additional number of years in learning how to apply the education received in the public schools. Not so, however, with the graduate of the Technical School. Here the student is given a finished education, at least in the arts and sciences of mechanism; an education that may at once be applied to any mechanical calling he may choose to follow. From the moment he crosses the threshold of the Technical School to go out into the world, he will be able to successfully fight the battles of life and need never become a mere 'hewer of wood and drawer of water.

To the public-spirited citizens who have founded this school the people of our city owe a lasting debt of gratitude and it is our duty to give it every encouragement possible. Whatever I can, I am willing to do, in my humble way, to make the Technical School of Cincinnati, a complete, a thorough, and a grand success.

He was followed by Professor Thomas Norton, Professor of Chemistry in the University of Cincinnati, whose topic so relates to the whole subject of the Common Schools, that his entire address is here given. He said :

Mr. Chairman, Ladies and Gentlemen : It is with great pleasure that I have responded to the invitation to be with you this afternoon. I am glad to show my personal interest in the important enterprise you have undertaken and am glad of the opportunity to bring you words of greeting from your fellow-workers in the University. Everything which strengthens the educational facilities of our community interests us most keenly, and we can not but feel an exceptional interest in this Technical School, offering as it does such admirable training for the special scientific courses of the University.

The want of such a school has long been felt in our city. It has for many years been evident that the courses of study in our public and high school system were not meeting the actual needs of a large class in our midst. This may seem to be a harsh accusation to bring against our finely organized staff of educators, with their army of over twenty-five thousand scholars, with their continued effort to increase the efficiency of their work, and their recognized pre-eminence among the inborn educational agencies of this country. While appreciating most thoroughly the earnestness, the conscientiousness and the ability of those in charge of Cincinnati's school interests, still, I can not but feel that here, as in other cities, the most pressing wants of a large mass of our youth in the matter of school training is disregarded.

Let me tell you how this fact first became apparent to me.

THE BREVITY OF SCHOOL LIFE FOR THE AVERAGE CHILD.

While perusing the admirable annual reports of our Superintendent of Education—reports, by the way, which every parent should diligently study in order to understand fully the enormous amount of care and thought bestowed upon the question of education in our city—I was struck by one feature in the tabulated statements of attendance. This was the rapid diminution of the number of scholars with each successive advance in grade. The fact interested me so much, that, basing my calculations on these published lists of attendance, I constructed the following table, designed to show the history of any one thousand children in the public schools of Cincinnati, at the average age of six years. As you all probably know, the free school system of Cincinnati provides for a course of five years in the district schools, a course of three years in the intermediate schools and a course of four years in the high schools, or a total of twelve years.

TABLE SHOWING DURATION OF SCHOOL LIFE FOR ONE THOUSAND PUPILS.

Number.	Years.	Schools.
1,000	1	District.
643	2	Do.
564	3	Do.
506	4	Do.
388	5	Do.
269	1	Intermediate.
185	2	Do.
130	3	Do.
67	1	High.
37	2	Do.
21	3	Do.
14	4	Do.

This table shows that out of 1,000 children entering our public schools, 643 continue the second year, etc.; 269 enter the intermediate schools; 67 enter the high schools, *and but fourteen complete the high school course!* Of these fourteen, five or six probably enter upon a college course.

Now, in drawing a lesson from these figures we must make due allowance for mortality. Vital statistics tell us that out of 1,000 children at the age of six years 80 will die before the age of 18. Bearing this fact in mind, still the above figures are most startling. They show that but thirteen per cent. of our school population complete the elementary training of the intermediate school, and but one and one-half per cent. avail themselves of the full opportunities of the high school.

WHY ARE NOT CHILDREN LEFT LONGER IN SCHOOL?

The question arises, why are children withdrawn so rapidly from school? Why does such a small fraction of the school population enjoy the exceptionally fine disciplinary advantages of our high schools? In reply, extreme poverty may be urged in a limited number of cases; difficulty of access or inefficient teaching certainly can not be a reason. To my mind the great cause of the withdrawal of children from the schools is due to the fact that their parents see no direct advantage accruing from the completion of the ordinary course of study.

Now, it is not the place here to question the merits of classical and literary training for the masses. I have no sympathy with the idea that a man of generous culture is thereby unfitted for manual labor. Week after week I have shared the toil of common laborers, and I never felt less happy or less efficient in my work because I could conjugate a Greek verb, while my companions had very hazy notions about the nature of any verb.

We must look at this problem from the standpoint of the average parent—we must follow the advice given by Charles Reade in his dramatic novel on the labor question, to "Put Yourself In His Place."

The mass of fathers in our city are men who gain their daily bread by manual labor; their skill and mechanical knowledge have been obtained slowly and painfully through years of toil. For their sons they expect in the vast majority of cases similar or identical careers. A man of this class may be intelligent and conscientious, anxious for the welfare of his children, but still the question arises inevitably at some period of his child's school training, "How far am I justified in carrying this training? Will my child be any better equipped for his probable life work by this prolonged sacrifice of time and money?"

The figures already quoted show what is the too frequent response—the child is taken at an early age from school and put at some occupation whereby he ceases to be an expense to his parents. Nor can we criticise so strongly the reasoning of the latter. It is difficult for them to see any value in purely intellectual discipline, and nearly all our present school training is comprised under this head.

HOW MANUAL TRAINING MAY LEAD TO LONGER SCHOOL LIFE FOR THE MASSES.

Let us see how the conditions of the problem are altered by the system of education which you have inaugurated in our city. Henceforth a parent sees the course of study in the intermediate school serving as a pathway to the privileges of the Technical School. In this school there is a happy mingling of lines of study calling for acute, careful observation, dextrous manipulation and accurate reasoning; training at once the eye, the hand and the brain; in other words, educating just those powers of mind and body with which the future man is to gain his daily bread.

It is not a difficult matter for any of our laboring class to appreciate fully the value of such a training. The intelligent artisan sees at once what a capital it places in his boy's hands to provide him with this admirable mental and physical equipment, enabling him to master rapidly and easily any mechanical calling, and readily rise to the foremost ranks of skilled labor. When the words 'schooling' and 'education' bear this new and practical meaning to the ears of those whose toil makes Cincinnati's wealth, can we doubt that in multitudes of cases they will cheerfully undergo the sacrifices necessary to afford their children such opportunities as are now being brought within their reach?

THE CITY SHOULD ESTABLISH FREE PUBLIC MANUAL TRAINING SCHOOLS.

It is my earnest hope that before many years have passed by, the principles upon which this institution is founded will be adopted by our school authorities and so engrafted upon the educational system of our municipality that the full benefits of this course of manual training may be offered freely to every boy and girl in our city. We tax ourselves generously that our high schools may be able to provide a most thorough and complete course of mental training for the youth in our midst, who will be the future lawyers, physicians and clergymen. Why should we not be equally generous towards those whose skill, taste and energy are required to maintain the well-earned renown of Cincinnati's manufacturing industries?

If it be urged that the expense would be too great, let us glance at the question for a moment from a purely financial standpoint. It is generally concluded by those who have examined the subject that the earning capacity of the average young man is increased by at least \$500 per annum as the result of the training in such an institution as our Technical School, and that this superiority in earning capacity is maintained throughout life as compared with the average artisan who entered upon his trade when still a boy.

This plus value may fairly be regarded as equivalent to the interest on a capital of \$10,000. Now, if you graduate classes of fifty members, as you hope to do soon, you will practically add to the capital of the city half a million of dollars annually; and I certainly regard that form of capital—the investment in manual and mental skill—as more desirable for the growth of our community, far more desirable than the simple addition of so much cash.

Such facts as these appeal to every public-spirited citizen interested in the material development of Cincinnati. Can we regard the comparatively small expenditure necessary for the maintenance of such a school as you have instituted as in any degree unwarranted when it brings in such a manifest reward in the increase of the economic values of the city?

More difficult to estimate, but certainly not less important, are the gains to the community in the improved morals of the artisan class, due to the presence of such a school as yours, upholding the dignity and nobility of the many *handicrafts* and the multitude of *handworkers*.

In closing, I would express the heartfelt wish that the disinterested labors of the officers and directors of our Technical School may receive ample recognition from all intelligent citizens and that their hopes for a numerous and enthusiastic attendance may meet the fullest realization.

Professor Norton's statements as to the conditions of public school attendance receive added emphasis and interest in connection with those which follow in the subsequent address by Dr. Peaslee, Ex-Superintendent of the public schools of Cincinnati, who praises the schools and educational institutions of the City. Professor Thomas French, Jr., Professor of Physics in the University of Cincinnati, followed in an address urging the further development of the present industrial phase of education and quoting in support of the movement, from Dr. E. E. White, then Superintendent of the Schools of the City.

Professor French said : * * * "I am profoundly impressed with the educational value of manual training in connection with mental training. In this system we recognize one of the results of the mighty force which is gradually transforming our methods of educational work. * * *

The educational teachings of Comenius, of Pestalozzi, of Froebel and their successors, have introduced a new era; we hail the advent of the Kindergarten, the Kitchen Garden, the industrial school, the various laboratories of science-schools as affording natural channels for the union of theory with practice. While the mind is taught to think, the eye must be taught to observe, and the hand to execute.

Industrial education is already more than justified in this and other countries by the fruits it has borne; the question is not "Shall industrial education be encouraged?" but in what manner may it be most wisely associated with our present system of schools and colleges? The subject is too vast for even cursory treatment at this time. A good beginning has been made in Cincinnati, yet how many of the inhabitants of this city are aware of the fact that a technical school exists here; again, of those who are aware of the fact, how many understand the purpose of its existence?

* * * * *
Let it be clearly understood that it is not the purpose of this school to teach trades, but to supplement scholastic training with such training of the hand and eye as shall most happily conduce to the rounded development of all the faculties; let it be known that the first end and purpose is educational, not commercial; although incidentally the knowledge and skill thus attained has a prominent commercial bearing and value. The technical school should supplement, not supplant, the public school."

* * * * *
It is very clear that Professor French does not mean an Engineering School on the one hand, or a Trade School on the other; he however suggests a school in which mechanical training only should be taught,—the other schools taking care of the mental and literary training.—This form has not however, seemed to commend itself to educators. Dr. Peaslee, it will be observed, especially commends this school for the fact that it cares for the general education of the pupils.

EXTRACTS FROM ADDRESS OF DR. JOHN B. PEASLEE, EX-SUPERINTENDENT OF THE CINCINNATI PUBLIC SCHOOLS.

No other city in this country, or in the world, offers, *free of cost*, so complete an education to her youth of both sexes as does Cincinnati. Her admirable District, Intermediate and High School system, crowned by the University, whose require-

ments for matriculation are equal to those of either Yale, or Harvard, and whose courses of study and thoroughness of instruction are not excelled by similar departments in any other college or university in America; her Art School, superior to those of her sister cities, and her Normal School, free to all her citizens, together with her private and pay institutions, such as the College of Music, which has no rival on this side of the Atlantic; the Hebrew Union College, the only one of its kind in America; St. Xavier's College, her Theological Seminaries, her Law School, her Medical Colleges, College of Pharmacy, Dental College, Kindergartens, Kitchen Gardens, Business Colleges, etc., and last but not least, her Technical School—all combine to make Cincinnati one of the great educational centers of the country.

Ladies and gentlemen, it is a little remarkable that in a city largely dependent upon its manufactures for its growth and prosperity, the very last institution to be established is a school for the training of young men to become skilled workmen and directors in the great manufacturing interests of our city. Suffice it to say that the Technical School is here, and it is here to stay, for such a school is absolutely essential to the future prosperity of Cincinnati. The time is not far distant when it will become one of the most important educational interests of our city.

Let me say to our citizens that there is a wrong impression in regard to the work of this school, which I desire to correct.

The impression is that little or nothing is done here but to teach the students how to use tools—that most of the time is spent in the shop. Not so. The founders believe in giving the students a scientific and literary education as well, and have, therefore, prepared a regular course of study in mathematics, literature, history, etc.,—a course that is admirable, and four hours per day are devoted to recitations and study in the same, and two hours per day to work in the shops.

And here let me add that full as much will be accomplished on the part of the students in the literary and scientific part of the course, by giving two hours a day to work in the shop, as would be accomplished if the whole time was given to the literary part and none to manual training. This, I know, seems paradoxical, but the experience of the half-day schools in London, established some years ago for boys who were compelled to work in shops, stores, etc., and the history of similar schools elsewhere, fully justify me in making the statement. Besides it is based upon sound Psychological principles, which I would be glad to present did time permit.

The young men who pass through this school therefore, not only obtain an excellent literary education, but also get a very thorough training in the use of tools, an extended knowledge of machinery, and an intimate acquaintance with the various processes of manufacturing. The great benefit to be derived from such an education must commend itself to the citizens of a great manufacturing city like Cincinnati. * * *

Before closing, I desire to congratulate the noble and public-spirited citizens whose time and money have been given to establish and carry on this school. The time will come when it will be shown that they "builed better than they knew"; and when Cincinnati will appreciate the great benefit they have conferred upon the city. Their names will be added to the long list of Cincinnati's benefactors.

* * * * *

The Historical Sketch already quoted from, closes as follows:

The second year opened September 5, 1887, with the enrollment of forty pupils, which has since increased to sixty-four.

The Commercial Club of Cincinnati took formal action, as a body on the subject of the Technical School in November, 1887—although a number of its members had been interested in the movement since its beginning—and have since borne nearly half of the expense of the school.

The first publication of the school after its opening was decided on, was a neat pamphlet,* giving a list of the first Board of Directors, with a clear statement, by Mr. George R. Carothers, Superintendent, of the character and purpose of the proposed school; with a schedule of studies, the course of instruction, planned to cover "four years, and to embrace five parallel lines—three purely intellectual, and two both intellectual and manual," accompanied by full details of programmes, terms of admission, expenses, etc., etc. Appropriate quotations were also given from Carlyle, Dr. Woodward, of St. Louis, and Col. Jacobson, of Chicago, in support of this new form of education.

The opening paragraph thus states the object of the school.

THE TECHNICAL SCHOOL OF CINCINNATI.

The recognized success of technical education, popularly called "The Manual Training Idea," in other cities, has led to the organization of the Technical School of Cincinnati.

The object of the school is to furnish practical instruction in the use of tools, free-hand, mechanical and architectural drawing, combined with mathematics, science and the English branches of a high school course. The contemplated tool instruction includes carpentry and joining, wood carving and turning, pattern making, moulding and casting, forging, tool-making, brazing and soldering, iron chipping, filing, planing, fitting and the use of machine tools. Other instruction of a similar character may be added to the foregoing from time to time as deemed advisable; it being the intention to divide the working hours of the student, as nearly as possible, equally between manual and mental exercises.

The arguments are urged that these schools are not merely to make mechanics, and are not Trade Schools, but have an educational value for all, irrespective of the incidental advantages of facilitating the future learning of the mechanical trades.

The first annual catalogue of the school was issued in February 1888.† A list of the 18 pupils who attended the first year is given. The names of the pupils in attendance, 1887-'88, in the "Second and First year" classes are given, and the numbers summarized as follows:

SUMMARY.

Second Year Students	30
First Year Students	29
Special Students	5
Total	64

The following extracts giving the conditions of admission, courses of study, details of drawing courses, etc., and the Superintendent's comments on the plan of the school, the purpose of the new education, etc., are taken from this First Annual Catalogue.

* Prospectus of the Technical School of Cincinnati. 1886-87. Pp. 15.

† A catalogue of the teachers, students, course of study, etc., of the Technical School of Cincinnati, Art Rooms, Music Hall Building. February, 1888. Pp. 34.

ADMISSION.

Candidates for admission to the first year class must be fourteen years of age, and should in general be prepared for entrance to High School.

Pupils will be admitted without examination on certificates from Principals of Intermediate or Grammar schools, showing them to be of good moral character and to have the necessary qualifications.

No pupil will be admitted without a certificate of good moral character from some responsible person—preferably the last teacher—and no pupil will be retained who is an impediment to the progress or an injury to the morals of his classmates.

An examination of candidates for admission will be held at the school rooms, Saturday, June 16, 1888, beginning at 9 o'clock A. M., and a second examination, Saturday, September 1st, at the same hour.

Candidates for admission to the first year class must pass a satisfactory examination in Reading, Spelling, Writing, Common School Geography, English Composition, with correct use of capitals and punctuation, Arithmetic, including fundamental rules, Common and Decimal Fractions, Denominate Numbers, Percentage, Interest and General Problems.

Candidates for admission to the advanced classes may present themselves at the same time and will be examined in the work (book studies) accomplished by the class to which admission is desired.

Those who have completed the mental work of the various classes may be admitted as special students in the Drawing and Shop work, being excused from other recitations at the discretion of the Superintendent. In general, the most satisfactory results are attained only by the close association of the mental and manual work.

Those who come to the school best prepared will be the ones to derive the greatest benefits from its course of study. Our experience has been that those who fail to do satisfactory work are those who are not well grounded in the most elementary branches.

EXPENSES.

The school year is divided into two terms of twenty weeks each. The tuition fees are payable by the term *in advance*, and for the present are as follows :

Class.	Per term.	Per year.
First year class.....	\$37.50	\$75.00
Second year class.....	50.00	100.00
Third year class.....	62.50	125.00
Fourth year class.....	75.00	150.00

No deduction is made for time lost by absence, or if the pupil is withdrawn before the end of the term.

Pupils must furnish their own books, drawing instruments and materials, scales, rules, calipers, etc., and their own aprons and overalls.

The school furnishes all shop tools and materials.

Drawing instruments and materials will cost from \$10 to \$15 for the first year, and from \$5 to \$6 thereafter. The cost of books will be about \$5 or \$6 per year.]

There is no lodging house in connection with the school. Board and lodging may be had in the city or suburbs for \$5 or \$6 per week. As no articles are manufactured for sale, there is no chance for pupils to pay their way by their labor.

DEPOSIT.

Every pupil will be required to make a deposit of five dollars to cover possible damage to the property of the school, which must be increased whenever the assess-

ments exceed the original deposit. This will be returned less assessments, if any, when the pupil severs his connection with the school.

The Technical School of Cincinnati offers the following course of instruction and practice, subject to such changes as experience may suggest :

FIRST YEAR.

Mathematics—Review Arithmetic, business forms and usages ; Algebra.

Science—Physical Geography ; Introductory Science ; Botany, of plants.

Language—English Composition or Language Lessons ; United States History.

Drawing—Lettering ; Outline and shading in charcoal from objects ; Freehand and mechanical ; Designs for Wood Carving.

Shop Work—Carpentry and Joining ; Finishing ; Wood Carving.

SECOND YEAR.

Mathematics—Algebra ; Plane Geometry.

Science—Botany, of woods ; Book-keeping ; Physics.

Language—Rhetoric ; English History.

Drawing—Isometric projection ; Mechanical perspective ; Projection of shadows ; Ornamental Lettering ; Pattern Draughting ; Freehand work ; Pen sketching.

Shop Work—Wood Turning ; Carving on turned surfaces ; Pattern Making ; Sheet metal work.

THIRD YEAR.

Mathematics—Geometry ; Plane and Solid ; Trigonometry.

Science—Chemistry and its applications in the arts.

Language—English Literature and Composition ; Civil Government (German or French).

Drawing—Orthographic projection ; Brush shading in India ink ; Model drawing ; Architectural drawing ; Decorative design.

Shop Work—Moulding and Casting ; Forging ; Welding ; Tool-making ; Brazing, etc.

FOURTH YEAR.

Mathematics—Mechanics ; Trigonometry and Surveying.

Science—Physiology ; Geology ; Theory and Science of Steam Engineering.

Language—English Literature and Composition, Elements of Political Economy (German or French).

Drawing—Water color ; Landscape Architecture ; Topographical Drawing ; Architectural design ; Machine Construction.

Shop Work—Machine shop practice ; Chipping ; Filing ; Lathe-work ; Screw-cutting ; Drilling ; Planing, etc.

The work of the school day commences at 9 A. M., and closes at 3:30 P. M., with thirty minutes from 1 o'clock for lunch.

To avoid monotony the classes change work and recitation rooms when possible, every hour. Under no circumstances is work of any kind allowed for more than two hours continuously.

In all cases the aims of the teachers are to *direct* the efforts of the pupils, to cause them to investigate for themselves, to become *students*. Whenever practicable the pupils are required to do experimental work and to write out the results of their observations.

Particular stress is laid on the study of English Language and Literature. In this connection, in addition to the outlined work, periodical visits are made to various manufacturing establishments and other places of interest. Generally those places are selected in which the work is similar to, or closely connected with the

topics of study at that time. The pupils are required to make observations and to take notes, which they must embody in an essay or descriptive account of their visit.

Writing and spelling also come under this head. All papers must be neatly written and are marked on construction, punctuation, capitalization and spelling. Special lessons in spelling are given three times each week, in defining, in spelling and in constructing sentences, in which the selected words shall be properly placed.

EXAMINATIONS.

Frequent examinations are given, and regular quarterly reports of each pupil's attendance and standing are sent to parents and guardians for their inspection and signature. *The minimum average required to entitle a pupil to pass in the work of a year is seventy per cent. in all the subjects of each term.*

Those whose yearly average falls below the standard are required to repeat the work of that year before entering the next higher class.

Under "General Regulations," the pupils are informed that they are expected to behave properly and attend regularly; if they wish to continue in the school. Diplomas will be given on graduation and seven prizes are offered, two for excellence in drawing, two for excellence in shop-work, two for excellence in scholarship—one for each class, one to the school for the pupil "making the best general record for the year."

Pupils who desire to enter the scientific courses of Colleges, Universities or Polytechnic Schools after completing the course in this school, will be allowed to take, with the approval of the Superintendent, German or French in place of English Literature and Composition, in the third and fourth years of this course.

Graduates of this school will be admitted without examination and free of conditions, on certificate of the Superintendent, to the scientific courses of the following institutions:

Columbian University, Washington, D. C. Purdue University, Lafayette, Ind. St. John's College, Annapolis, Md. Swarthmore College, Swarthmore, Pa. Rose Polytechnic Institute, Terre Haute, Ind. Case School of Applied Science, Cleveland, O.

Certificates will be granted only to those whose work has been thoroughly satisfactory in every particular throughout the entire course.

The work in Drawing is outlined as follows:

DRAWING.

The following is the present plan of the course in drawing arranged topically:

FIRST YEAR.

(1) Freehand work on blackboard; Working drawings for shop. (2) Lettering, Mechanical and Freehand. (3) Outline and shading from objects in charcoal. (4) Freehand shading in pencil from machines, etc. (5) Mechanical drawing, use of mathematical instruments, pen lining, etc. (6) Freehand sketches of machines or tools with dimensions accurately marked from which mechanical drawings may be made; Mechanical drawings of same with details and sections. (7) Freehand decorative drawing and designs for wood-carving.

SECOND YEAR.

(1) Isometric projection. (2) Mechanical perspective from models; problems in plain and oblique perspective. (3) Freehand perspective, blackboard and paper. (4)

Projection, formation of objects, tinted. (5) Projection of shades and shadows with ruling pen. (6) Ornamental lettering. (7) Geometric construction. (8) Pattern draughting. (9) Sketches, with pencil and with pen and ink.

THIRD YEAR.

(1) Orthographic projection. (2) Brush shading in India Ink. (3) Drawing from casts and models in light and shade. (4) Geometrical ornamentation and principles of decorative design. (5) Architectural Drawing, including plans, elevations, sections, details, perspective and working plans. (6) Household decorative designs, as applied to wall papers, carpets, etc.

FOURTH YEAR.

Architectural course.—(1) Topographical drawing. (2) Study in water colors. (3) Landscape Architecture, arrangement of lawns, drives, parks, etc. (4) Interior decoration, staircase halls, libraries, etc. (5) Original design of a house with plans, elevations, sections, details, etc.

Mechanical course.—(1) Topographical drawing. (2) Engineering, draughting, grades, fills, sewers, etc. (3) Square and V threaded bolts, etc., shaded in India ink. (4) Machine construction, bevel gears, spurs, miters, eccentrics, etc. (5) Final project drawing of machine, shaded in India ink, with details and working drawings.

This course of drawing is based on the theory that a knowledge of the art of drawing is fundamental to accurate mental conceptions.

Its object is to train the powers of observation before proficiency with pen or pencil is expected. To teach the eye to see all there is of an object, and seeing, to delineate it. As the imaginative mind is able to comprehend ideas sooner than the unimaginative by the greater facility with which it forms mental representations of them, so the student trained in the use of the drawing pencil outranks the one who is untrained, not only in the drawing and mechanical work, but in the sciences, mathematics and language.

The work of the drawing course can not be accomplished entirely in the school time. In some cases the theories and principles are given and the pupil does the work at home, it is then brought in for inspection. The greater part of the work, however, is done at school under the immediate supervision of the instructor.

The list of pupils shows five young ladies in attendance and the following programme is outlined for the proposed new Department for girls.

DEPARTMENT OF DOMESTIC SCIENCE.

Owing to the fact that the school has been established but a short time, the department of Domestic Science and Economy is not yet fully equipped. It is the intention of the managers that when established it shall be first-class in all its appointments.

The following is the outline of the proposed course of study and practice:

FIRST YEAR.

Mathematics—Review Arithmetic, business forms and usages; Algebra.

Science—Physical Geography; Introductory Science; Botany, of plants.

Language—English Composition or Language Lessons; United States History.

Drawing—Lettering; Outline and shading in charcoal from Objects; Freehand and mechanical; Designs for Wood Carving.

Shop Work—Carpentry and Joining; Finishing; Clay Modelling; Wood Carving.

SECOND YEAR.

Mathematics—Algebra; Plane Geometry.

Science—Botany, of woods; Book-keeping; Physics.

Language—Rhetoric; English History.

Drawing—Isometric projection; Mechanical perspective; Projection of shadows; Ornamental Lettering; Pattern Draughting; Freehand work; Pen sketching.

Shop Work—Wood turning; Carving on turned surfaces; Pattern Making; Sheet metal work; Pottery throwing and turning.

THIRD YEAR.

Mathematics—Geometry, Plane and Solid; Trigonometry.

Science—Chemistry, its application in the arts, and in the cooking and preparing of food.

Language—English Literature and Composition; Civil Government (German or French).

Drawing—Orthographic projection; Brush shading in India ink; Model drawing; Architectural drawing; Decorative design; China painting.

Laboratory Practice—Cooking and preparing food; Purchasing household supplies; Laundry work; Nursing the sick, etc.

FOURTH YEAR.

Mathematics—Mechanics; Trigonometry and Surveying, or Astronomy, or Zoology.

Science—Physiology; Geology; Theory and Science of Steam Engineering.

Language—English Literature and Composition; Elements of Political Economy (German or French).

Drawing—Water color; Landscape Architecture; Topographical Drawing; Architectural design; Machine Construction.

Laboratory Practice—Plain and Fancy Sewing; Cutting, fitting and making of garments; Stenography; Type Writing.

The above course of Domestic Science and Economy is designed to give young women a good high school education in English Language, Mathematics, Natural and Physical Sciences, in Household Economy and Management, but above all to train them to be *useful* with hands and heads.

It does not seek to train the hands to do physical labor at the expense of breadth and versatility of mental development, but to train the mind, the eye and the hand harmoniously and in unity. It proposes to give the girl who takes the whole course the kind of training that will enable her to go out self-reliant, to put her in the way of being independent, at the same time giving her such training that she may become a good housekeeper, should she ever have charge of a home. Believing that the fundamental safeguards of morality and virtue are in happy, homelike homes, and that the power of the accomplished housewife to make such is very great, it aims to give the elements of such training.

As a number of inquiries have been received for girls capable of doing certain kinds of manual work which are taught in the third and fourth years of the regular course, arrangements will be made that those who desire it may receive instruction in those branches. Of course it is understood that this practice will be of the lightest, and for those only who especially desire instruction in work of this kind. The demand is principally for makers of surgical and electrical appliances, and requires those who have the ability to draw, make plans and lay out work, rather than those who have a high degree of constructive skill.

No more work is done in any department of the school than is necessary for instruction and practical drill in the various branches, as the object is EDUCATION, not physical labor.

For those who wish to enter the scientific courses of colleges or universities, German or French are elective in the third and fourth years of the course; for those who do not, there are elective studies in place of the mathematical course of the fourth year.

The Wood-working Department is provided for as follows:

SHOP EQUIPMENT.

Two shops are equipped at present, the Carpentry department and Wood-turning department. Both departments are at present in the same room, which is 60x90 feet.

There are twelve double wood-worker's benches in each equipment, which are furnished with iron coachmaker's vises of the latest improved pattern. Each bench has two complete sets of tools, consisting of rip, hand and back saws, hammer, mallet, oil-stone, oil-can, try, bevel and carpenter's squares, dividers, scratch awl, screwdriver, jack, smoothing and jointer planes. Besides these there are kept in the tool room a number of special and general tools, to which all of the pupils have access as occasion may require. Each pupil has an individual set of chisels, gouges and carving tools, which are kept in locked drawers. For the condition and safety of these tools the pupil is held responsible.

In the Turning department there are seventeen speed lathes and one engine lathe, a circular saw for getting out stock, emery grinder and grindstone. As in the Carpentry department, each pupil has an individual set of turning chisels and gouges.

The machinery is driven by a seven-horse power Van-Duzen Gas Engine.

The shafting and pulleys were given to the school by the Lane & Bodley Co. The driving belt, an Ireson patent link leather belt, is also a gift from the Consolidated Boat Store Co., of Cincinnati.

The theory of the instruction to be given in the shops is thus set forth:

SHOP INSTRUCTION.

In shop practice the work done is intended to be disciplinary and to promote habits of self-reliance. The faculty of making plans and the ability to execute them are the objective points rather than manual dexterity or unusual skill in any particular line of work.

In beginning the instruction in any department the simplest tools or appliances are usually taken first. In the Carpentry department the saw is the first tool used. The instructor gives a lecture, or explanatory talk, on the theory of the tool, and the uses to which it may be put, illustrating the same by doing practical work, asking and answering questions until the subject is clear to every member of the class, each one then proceeds to do the work for himself, the instructor giving assistance and individual aid to such as may need it. As soon as the pupils are fairly proficient in the use of one tool another is given out, until they can saw fairly straight with or without a guiding line, plane a true surface, use the marking gauge, plane accurately to a gauge mark, "square a piece," etc.

They are now ready to lay out work from drawings, and from their instruction in the drawing room are able to make drawings of simple rectangular objects in plain projection. Each pupil is required to use a blank book in which the working drawings for the shop are made *by himself* to a specified scale. These drawings are made from the object to scale, or from a blackboard sketch on which the correct dimensions are given in figures. The course in shop practice and drawing is

arranged in progressive lessons, and thus the pupils are soon able to make intricate drawings in orthographic or isometric projection, *freehand*, from which they make accurate models in the shop.

The shop instruction after the first practice-work consists of examples of the various kinds of joints, mortises and tenons splices, scarfs, frames etc. Pupils are given no practical work to do before they know how to handle the tools. It is always discouraging to the novice to attempt work beyond his ability and to fail in it.

In this work, besides the physical powers, the powers of concentrated attention and thought are brought out and developed. One great value of such training is in the aid it gives in determining the life-work of those who come within its influences. It aims to aid the pupil in finding the work for which he is best fitted at the least possible expenditure of time and money, to develop the tastes when discovered, that he may *know* in making a choice that it is a wise one.

The school instruction is widely different from that in vogue in shops and factories in the training of apprentices, in that the object sought is the mastery of tools and the training of the judgment, rather than immediate apparent results. The average foreman or employer seeks to make the labor of the apprentice remunerative as soon as possible. Generally when he can do a thing well he is kept at that particular thing that his work may become more valuable as his skill increases. His knowledge of other lines of the trade is usually "picked up" by chance or he obtains it by being placed in unusually fortunate circumstances. The qualifications of such a one when he becomes a tradesman are usually limited to proficiency in a few things instead of a wide and available knowledge of many.

The final pages in which Mr. G. R. Carothers discusses the question of the new forms of education to be applied in the new school are given in full:

THE GENERAL PLAN OF THE SCHOOL.

The mistake of thinking the Technical School a refuge for refractory or indolent pupils should not be made. If a boy can not be made to study, and is one who must be coerced if he ever learns anything at all, he is out of place in the Technical School.

The course in this school requires of its students as much application and continuous honest effort as does the course in any academic institution of equal rank. The advantage claimed for its hand training is that it requires *thinking*. The work is never so long continued that it becomes mechanical or automatic, but is changed so frequently and is varied in its nature so that it requires as much mental effort—although of a different kind—as is required in the study of mathematics or of languages.

To guide the hand in its ever varying tasks requires the continuous directive effort of the mind and results in after-reflection on the degree of success or failure in the work attempted, of disappointment and of plans for overcoming the opposing obstacles, and the tangible results are to show when success at last crowns the efforts of the genuine student. The result of the thinking, the planning, the final overcoming of the difficulties and the production of the finished product is education in its truest sense, the awakening of dormant faculties, the development of the latent capabilities.

But some object to schools founded on this system, because hand training is the plan followed in educating the defective classes. That there are those who cannot comprehend reasoning in the abstract without first having been taught by means of tangible objects should be no reason for objections to our methods. If such wonderful results are accomplished by such means with those who are lacking in mental capacity, why not expect grander and fuller results from those in the complete

possession of all their mental attributes? If such great things are attained in the education of the blind, deaf-mutes and those who are deficient in their mental powers, through the agency of that wonderful piece of mechanism which distinguishes the highest of created beings from all others—the human hand—why not look for the fullest exemplification of the value of this training with those in the full possession of all their powers, both mental and physical, in schools of hand culture?

Pupils are not always correctly judged. The one who in the grammar school or academy was thought to be a sluggard, a dunce or an incorrigible, when placed in a technical school often develops exceptional ability and outstrips with ease, both in mental and manual work, those who were thought to be his superiors, because of the awakening of the faculties which were waiting for the magic touch of congenial occupation to bring them into abundant life.

The apparent dullards and idlers are not always those who derive the greatest benefits from manual training. The bright pupil who has a natural taste for mechanical pursuits and who does well anywhere because of his tractibility and teachableness, at once shows an interest and enthusiasm in the work that is contagious among his fellows. However, it is not claimed that brilliant results will be obtained in each and every case. It is a melancholy fact that there are some children who will not be taught in any school, and who oppose all attempts to instruct them, and what knowledge they do acquire is mainly by coercion or by the happy selection of instructors.

It is interesting to the inquiring observer to note the acquirement of skill, the development of taste for certain lines of work, the discovery of natural abilities hitherto unsuspected, the finding out of the kind of work best liked, or of what is equally valuable, of that which is *not* liked.

Generally it is not long after a number of boys are started in work of this kind, before some of them will be asking for permission to do work for themselves or friends outside of the regular class-time. Then they will undertake small jobs for other persons, and presently some will be purchasing tools to be used in their leisure moments.

THE EXERCISE IMPROVES THE HEALTH OF THE PUPILS.

It is a well established fact that the general health of students in manual training schools is better than that of the students in other schools of like grade which have no manual training or equivalent exercise.

In this connection it is remarkable that because of ill health some of our best pupils were never able to do the work of an entire school year before coming here, but since their connection with this school have scarcely missed a day in attendance. This they attribute to the beneficial effects of the physical exercise received in the work-shop. They noticed this more particularly because, not being accustomed to manual labor, the shop-work at first seemed to weary them excessively, which feeling passed away as soon as they became accustomed to the work. They now look forward to the shop-time as being the best part of the day.

GENERAL SCHOLARSHIP NOT NEGLECTED.

It must not be inferred that general scholarship is neglected in this school. Indeed, though the hours devoted to purely mental work are fewer than in other schools, the general scholarship of a certain number of students taken at random will be almost sure to outrank the scholarship of an equal number of high school or academy pupils, and will be certain to do so in the natural sciences, drawing, and mathematics.

By their training in the use of tools students are enabled to manufacture simple apparatus for experimenting in the physical laboratory, and not only the simple, but some of the more complex. The inventive faculties are stimulated and in work-

ing out one idea materials are collected for others. Thus habits of observation and reflection are acquired, without which no one ever becomes a successful student, or a scholar in the full sense of the term.

The shop-work is but the practical application of the instruction received in the drawing room, for no work is allowed to be done in the shop without first making an illustrative or a working drawing. And a drawing instead of being a confused mass of lines to the student soon becomes a living representation, full of meaning.

The extraordinary advantages of these schools to those possessing mechanical tastes or inventive talents need but to be presented to be recognized. The technical instruction is not narrowed to the details of a few trades, but the use of tools and practically the foundation principles of all trades are taught. This is also the case in drawing, in which it is not intended that the ornamental and artistic shall be wholly crowded out by the technical.

The science course in the Technical School is arranged to harmonize as closely as possible with the technical work as well as with the course in mathematics, so that while the *how* is being taught in one department it is closely followed by the *why* in another. At the same time due provision is made for the study of language and literature. The inventive genius who starts out with such an equipment is surely a long way on the road to success.

On the other hand, the reasons why those who do not possess mechanical ability in a marked degree should take a course in a technical school, is perhaps expressed in the arguments we often hear put forth by educators in classical and mathematical schools: "If you have a dislike for languages or for mathematics that is the very reason why you should study them. It shows a deficiency in the mental nature in that particular direction and should be made up by special effort to overcome it." But this may be asserted with better reason in regard to technical schools, for failure in this line of study more often results from carelessness and inattention than from lack of mental capacity. A case of a pupil passing through a course of this kind without showing proficiency in some line of technical work is exceedingly rare indeed.

INCIDENTAL ADVANTAGES OF THIS TRAINING.

Apart from its educational value the benefits which may be derived from the physical training received, will amply repay one for the time spent in this department, in this respect almost equaling gymnasium work. It is a fact established beyond all cavil that those students in schools and colleges who take a regular and judicious amount of gymnasium work, stand at the head of their classes in scholarship, in physical and mental health, in endurance and capacity for work and are longer lived than those who do not.

How many men—and women, too—are there who would do small mechanical jobs for themselves at a saving of time, temper and money, if they but knew how? How many are there who follow sedentary occupations and who do not take sufficient exercise, who would give themselves the relaxation from business cares, which they so often crave in the working out of some pet theory or long cherished mechanical idea, if they but understood constructive drawing and the use of tools? and perhaps in so doing they would enjoy better health and a longer lease of life.

In speaking of technical education, quite a number of business men of Cincinnati have said to the writer: "I wish I could spare the time to take the entire course of drawing and tool instruction in your school, not that I would expect to make a direct use of the knowledge, but for the satisfaction of knowing how to do things for myself. Whenever I desired to have any mechanical work done, I could make a drawing of what I wanted and would know when the work was properly completed. Many times in my experience would knowledge of that kind have been particularly valuable to me." The frequent recurrence of such remarks has been surprising.

VALUE OF THIS TRAINING TO GIRLS.

But of what possible use is this training to the average girl? To what use can she put the knowledge of this kind of work? are questions that are frequently asked. The technical training is equally as valuable to girls as to boys in giving physical as well as mental training and in affording the means of a complete and well-rounded education. It conforms to the principles of the "New Education" in being objective, in dealing with the practical things of life rather than with abstract speculative theories. It is no more certain that a girl will follow the beaten paths in choosing her life work, than it is safe to predict that because a man is a lawyer, physician or what not, his son will follow in his footsteps.

This school will help to make places for young women in the continually widening fields of labor. There is no good reason why a girl who possesses architectural ability and who wishes to use it in making her own way in the world should be prevented from doing so, if the way can be opened for her as well as for her hitherto more fortunate brother. Or, if she desires to decorate and to beautify her home with wood carving, why should she not have the opportunity for learning how? For, not knowing how, she may be obliged to call in perhaps a carpenter who has no ideas of design or of neatness of work, and then to take his productions to the professional wood carver to have him hide the defects of construction or to make them hideous as the case may be. For if the design be faulty no amount of decoration can make it beautiful.

To those who learn wood carving the preliminary use of tools and constructive drawing are absolutely essential to the production of thoroughly satisfactory work.

But the work of greatest value to young women in this course is the Domestic Science and Economy. It is the natural expectation of every girl to have at some time a home of her own, and she should have the necessary training to enable her to care for one properly. She should have a thorough knowledge of cooking and kindred domestic sciences, of laundry work, cutting, fitting and making of garments, of the care of the sick, of hygiene and the laws of right living, so that when she has the management of a home she will be competent to direct her household affairs, even though she may not have to do the work herself. If men started out with as little practical knowledge of their business affairs as does the average young woman of housekeeping, business failures would be chronicled every day by the score instead of the occasional few as now.

The need of such instruction for girls which this school supplies has been demonstrated in the short time since the school has been started by the number of applications that have been made for young women who have the knowledge of drawing and the use of tools which is outlined in its course of study. The girl who takes the course in this school will be useful in the office of mill or factory, and can command a good salary, for she will be able to understand plans and constructive drawings, and not only to understand, but to make them for herself. A number of employers have said that they will pay fair salaries to office girls who have such attainments.

The fathers of the boys who graduate from this school will not be obliged to take them around to see men at work at the various industries from which they must make a choice of a vocation, as did Franklin's father. They will know, when through with its course, what they like and what they do not like. Its graduates will not come out helpless to do anything for themselves, waiting for something to turn up; they will not be obliged to spend three or four years in learning how to work. They will *know* how, and will be ready to commence the practical application of their knowledge the day after their graduation.

All applications should be addressed to

GEO. R. CAROTHERS, *Supt.*

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BOARD OF DIRECTORS OF THE TECHNICAL SCHOOL OF CINCINNATI, 1887-'88, 1888-'89.

Wm. L. Robinson, President.

Henry C. Ezekiel, Vice-President.

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LIST OF TEACHERS FOR 1887-'88.

Geo. R. Carothers, 328 Findlay Street, Superintendent. Albert F. Kuersteimer, 3 Noble Court, Mathematics, Natural and Physical Sciences. Etta I. Anthony, 158 Linn Street, Mathematics and English Language. Will H. Slicer, 94 West Ninth Street, Drawing. Louis S. Russell, 156 West Twelfth Street, Woodwork.

The next publication of the school is a pamphlet containing the prospectus of the school and extracts from the addresses delivered on the occasion of the Second Annual closing exercises, which took place June 13th, 1888.* The list of the prize winners for the two years is given, and also a list of the names of sixty-four citizens of Cincinnati, whose subscription to the "Technical School Fund" have sustained the school.

Extracts from the Address of Col. Wm. L. Robinson, President of the Board of Directors of the Technical School.

* * * After all the crowning glory of this Centennial year is the fact that in all the hundred years of the history of this city, the public spirit of her people could be relied on in any emergency for any object of value; and the special subject for congratulation at this time, is that that same public spirit is crystallizing around this school in such a way as will insure its future and will make it an institution of value to Cincinnati.

As to the work of the school, a tree is known by its fruit. The work of the Technical School of Cincinnati speaks for itself, as you will notice when you examine the specimens of shop-work and drawings which are displayed in the adjoining building, and which you will have the opportunity of inspecting after the close of these exercises.

This is the time and place to say that we owe much to the pupils of the school who have done such excellent work, which is not only a credit to the school and to the city, but speaks forcibly and eloquently of the intelligence and industry of the young men and women we have had the pleasure and honor of instructing during the past year—young men and women who are determined to make their mark in the world, and to go forth from this institution well equipped for a life work of usefulness.

The work of the teachers deserves high praise; it has been characterized by a faithful devotion, by a heartfelt interest and an ardent appreciation of their high calling which can not fail to bring good results and to win for them the high regard of the community.

Mr. Carothers, the Superintendent of the school, who is entitled to our congratulations for his successful work, and whom I now introduce to you, has some remarks to make, for which I ask your careful attention and consideration.

*Technical Education. Extracts from Addresses delivered by Col. Wm. M. Robinson, Supt. Geo. R. Carothers, and Rev. Geo. A. Thayer, in Cincinnati, Ohio, June 13, 1888, upon the occasion of the Second Annual Closing Exercises. 1888, The Bloch Publishing and Printing Company. Cincinnati. Pp. 29.

The address of the Superintendent, gives a most interesting description of the "day of small things" which a high authority has warned men not to despise; but, to have a school, the opening of which has been so widely published in advance, begin with only three pupils in attendance, and end its first year with a list of only 18, must certainly have tried the faith of teacher and patrons.

ADDRESS OF SUPT. GEO. R. CAROTHERS.

Ladies and Gentlemen:—In reviewing the work of the school for the year and a half of its existence I wish to call attention to its small beginning. No other school of this kind in America has been started in the small way in which this school originated. With but six hundred and fifty dollars in its treasury, it set out to do a work which in other cities has taken nearly as many thousands. It was thought by many as something next to madness to undertake such an enterprise on so small a monetary capital. I say monetary, but there was one resource which did not show on the books, which did not appear in the balance at the bank, it was that humanitarian love for the right training of the youth which was expected to spring up in the hearts of the people when the school had demonstrated by its works what it could do for the boys and girls of Cincinnati. It was an exercise of faith, which is in reality the foundation of business transactions, for without faith in humanity it is impossible to carry on business.

But faith without works is dead. It was not started on faith alone. Before a meeting was held in the movement a careful estimate was made of the money necessary to equip and establish such a school, and the probable income to be derived from its tuitions. So far in its history it has kept within those estimates. It has probably been for the best that the school started in such a small way, and that starting without a large fund it has been successful. It has demonstrated that such a school can be started and successfully carried on without an endowment fund of thousands of dollars.

I have received letters asking if it were possible to start such a school on fifty thousand dollars with reasonable prospects of success. I have answered, Yes, if you have five thousand dollars—five hundred dollars—and can show good results in the work, your prospects of success are good.

The tree which stands alone is slowest in its upward growth. Without the support of its fellows it is wind-swept on every side, and must take a firmer hold in the soil to sustain itself, but eventually it is more symmetrical and rugged than any in the forest. Perhaps the growth of this school may be likened to the tree, which has its origin in the tiny germ, it grows up and is buffeted by the winds of adversity, which only loosens the soil around its roots, and allows them to sink deeper and deeper into the earth. It grows and its branches spread, and from the sapling of which but few took notice it becomes the mighty tree which compels attention and admiration by its very grandeur, to look upon which, as it spreads its branches heavenward is an inspiration to the beholder to try to do better.

Coming here, as I did with the expectation of starting with a large class of pupils, I was disappointed on our opening day with the small gathering that responded to the invitation, and with the class of three that enrolled themselves as pupils of the school. I almost despaired of ever being able to do anything in Cincinnati. But all along I have been encouraged by the hopefulness of our President, who has never ceased to look forward to a bright future for the school, and who once said to me when the prospects were anything but encouraging: "Keep up your courage and work away, though it seems small and insignificant now, it may be that it is a work that is destined to endure for all time." Then the pride that comes to him who has put his hand to the plow and is tempted to turn back but resists, swelled

within me, and I went on in the endeavor to do the most possible. The recollections of that first year's work will stay with me while memory exists.

As the time went by and more pupils came I was encouraged, and pushed on with greater hope of success.

At our closing exercises last year a gentleman came to me and said: "I think that you have done a good work, and when people find out the value of it, all will be smooth sailing. You may have fifty thousand dollars and not have a school, but when you have fifty pupils who can do work like this, then you *have* a school, and the money for carrying it on can be easily raised."

We have now more than the fifty pupils, and the judgment as to the success of this work I will leave to you. I wish to state, however, that the work you will see is not that of a few selected pupils; every one is represented. We have not put forward the work of a few of the best as representative of the work of all. It is not so difficult a matter to produce good results if you can make the work attractive to the pupils. And the report seems to have gone out that the work is attractive, for I have been informed that there are pupils in the district schools who are looking forward with longing to the time when they can come here and work with things more congenial than spellers and copy books.

Every teacher who has had experience knows the amount of self-sacrificing, painstaking labor required to succeed in getting reasonably satisfactory work from every member of a class. I must here thank my co-workers for the earnestness and faithfulness with which they have labored to produce these results.

Emerson, in his essay on self-reliance, says: "If our young men miscarry in their first enterprises they lose all heart. If the young merchant fails, men say he is *ruined*. If the finest genius studies at one of our colleges and is not installed in an office within one year afterward in the cities or suburbs of Boston, or New York, it seems to his friends and to himself that he is right in being disheartened and in complaining the rest of his life. A sturdy lad from New Hampshire or Vermont, who in turn tries all the professions, who *teams it, farms it, peddles*, keeps a school, preaches, edits a newspaper, goes to Congress, buys a township, and so forth, in successive years, and always, like a cat, falls on his feet, is worth a hundred of these city dolls. He walks abreast with his days and feels no shame in not studying a profession, for he does not postpone his life, but lives already. He has not one chance, but a hundred chances." It seems to me that if Emerson could have looked forward at that time and have seen the manual training and technical schools as they exist to-day, and have realized the advantages which they offer to the rising generation, he would have put the graduates of such schools first on the list among those who have the hundred chances in life.

For the hand-training of our school we claim four pre-eminent advantages:

First. The Moral Training. * * *

Second. Its intellectual training. * * *

Third. The aid such Training will give in choosing a Life-Work. * * *

Fourth. The benefits of the physical exercise to be derived from such work. * * *

In enumerating these advantages I have left that of the physical benefits for the last; in reality I think it should be paramount to all others. The old saying of the sound mind in the sound body is of as much force to-day as when it was first uttered.

Mr. Carothers, then briefly considers the arguments of the opponents of Manual Training as follows:

I have heard a great many arguments against manual training, but I think that the majority of them are from those who do not know what manual training is. They think that because instruction is given in the use of tools it means the teaching of trades. When set right they think it worse yet, if we teach the use of tools and do not teach trades, the time of the pupils must be wasted. In their estimation

nothing is equal to the study of books. The study of books is excellent, but the study of *things* most excellent. The thought required to comprehend a book is not equal to the thought required to produce it. There are other ways than the printed page of expressing thought. The thought necessary to bring the printing press, the steam-engine, the electric telegraph, and the host of kindred appliances to their present state of perfection has been greater and has done more to civilize the world than all the thought ever expended in the comprehension of books describing them. Nay, more; though you may know by rote all the books ever written descriptive of the locomotive engine and have never seen or handled one, you do not know what an engine is. And why spend time in the study of books when the things themselves may be had?

Educational work has had the tendency of being top-heavy. Educators seem to have been trying to stand the pyramid on its apex instead of on its base, to educate the mind to the point of exhaustion, to the detriment of both mental and physical powers. Like the traditional "one-horse shay," it is the weakest place that must stand the strain.

He then discusses the value of physical training and says:

In order to secure the best results in school work, provision must be made for physical as well as for the mental training, and this is best done in the manual-training school. While manual training has done and can do wonders there is still room for improvement. I am not yet satisfied with the capabilities of our own institution. I would add gymnasium work also and require a certain amount of systematic gymnastic exercise as a part of the daily programme. Then in a graduating class of fifty boys, who had taken the full work of the four years, I would expect to find fifty prize pupils. They would be more than boys—they would be men, mentally and physically. And I would not restrict the benefits of such training to boys either. Girls should have equal opportunities with boys.

A prominent physician of Cincinnati said to me recently after reading our catalogue: "You do not sufficiently emphasize the value of the physical exercise of the work of your school, especially to delicate girls. In connection with the mental work, the hygienic value of such physical exercise can hardly be too highly recommended."

He was followed by the Rev. George A. Thayer, who evidently appreciates the relation of Industrial Art Education to the well being of the workers throughout the United States; who recognises the need of art training, as well as the value of intelligent and definite direction in all educational efforts, whether the objective purpose is training in expression by words, or by drawings, or in the making of things.

ADDRESS OF THE REV. GEO. A. THAYER.

We are here to celebrate the hopeful ending of the second year's work of this Technical School. * * *

The school was established by a few public-spirited men, who saw clearly the gap in our city's education, which such a school was needed to fill, and who brought to bear upon its organization not only faith and zeal—which are apt to be the sole equipment of promoters of new enterprises—but intelligence and liberality. They and others who have followed their good example have raised more than five thousand dollars for the current expenses of the year; and now they are resolved that it shall no longer be an experiment, but a permanent institution, with an endowment sufficient to supply it with the machinery and tools needed for the various

departments of a good technical school for the training of boys and girls. In my opinion, it should also have a house for its operations, which should be its own, undisturbed by any exigencies. No school any more than a man works so well as in the one place in which it is accustomed to work; and unfortunately this school during the past year has, in some of its departments, been like Noah's dove, seeking in vain a rest for its feet.

The following reference to what has been done in another city illustrates how the circles of influence extend and multiply, as has already been frequently shown in this Report.

I had the pleasure, a few weeks ago, of looking through the well-equipped Manual Training School at Toledo. Here was a large building, generously endowed, with facilities for instruction in carpentry, iron-working, mechanical and free-hand drawing, and sewing and cooking; a place where the pupils of the free public schools might, with small charge, learn the rudiments of the trades by which they could earn their living; where the girls of the high school were, even then, at work cutting and making the dresses which they were to wear upon graduation day; and where other girls were acquiring an insight into the art which has so much to do with the world's daily health and comfort, viz.: that of good bread making. The thoughtful citizen of Toledo may well be proud of an institution which is to play a mighty part in the industrial development of his city, and which is likely to set it far ahead of cities less fortunate in the race for prosperity. For the pre-eminence of any great manufacturing city lies less in its natural material resources than in its educated skill; its intellect applied to hand and eye.

The world of our century is engaged in a tremendous battle for industrial leadership, and the victory does not come to those who depend upon brute force, upon the bounty of the earth in minerals, or in abundant crops, but to those whose sons and daughters are best armed with knowledge of the laws and rules which underlie tasteful and economical production. "How did you paint it?" some one asked a great artist. "With brains, sir," was the answer, which could be put into the mouth of the people of those States and cities, the world over, which are distinguished for the elegance of their manufactures.

We, of these United States, will not keep the place assigned to us by good fortune, as a productive people, by trusting to the bigness and native wealth of our land, eked out by sundry acts of Congress and our several State legislatures. We must use well our rational faculties, by whose exercise alone man subdues the earth and assumes the primacy among his fellows. And such a school as that of Toledo, may well serve us of Cincinnati as a model, to be copied, to be enlarged and improved upon if possible, but to spur us to activity, until we have such an institution for the training of our youth.

The nucleus of this institution is in our Technical School, some of whose products we are contemplating to-day. To the people of Cincinnati, both to its generous givers, and to its parents, whose children might profitably seek instruction in manual arts, the Directors and teachers of this school may earnestly appeal for future co-operation.

What such a school attempts to teach is not something profound and difficult. It simply starts with the principle that there is a right, intelligent, labor-saving way of using tools, which can be better learned by a few weeks' scientific instruction than left, as it commonly is, to be picked up by painful exercise after a long time.

After speaking of the necessity and value to mechanics and artificers, of a knowledge of drawing, both free hand and mechanical, he further illustrates its utility by instancing the methods of the author,

who first makes a rough draft of his essay, and then, by careful, patient work, completes and perfects it. In like manner the designer's ideas will develop and strengthen by the very fact of his attempting to reduce them to lines, in his drawing or plan. The workman who can do this has already superior power. He further shows that, in all departments, the purpose of education is to save labor, to show the pupil how to apply his mental, as well as physical powers to the best advantage. Thus the speaker aligns Manual Training with Classical Education!

I believe that the number of mechanics who can, as the phrase is, *read* a drawing, know the intention of the sketch made by a designer is very small, and that small number marks the limit of the men who can attain eminent success in their trades, as superintendents or employers. Yet there is no more mystery and little more difficulty in learning how to make and to interpret a drawing than there is in learning how to read and write. Neither genius nor special talent is requisite to enable any man to put upon paper a design of the thing he wants to construct in wood or metal. Only systematic instruction for a few years or months and patient practice are necessary.

Then those of us who undertake much writing know how in the process of expressing our thought upon paper it works itself out from its first rough form into clearness, finish and perfection. By studying the matter over slowly and thoughtfully we say what we want to say in the best words. It is the same in working out a mechanical idea through a drawing. The designer slowly feels his way as he sees in his mind's eye how the thing will look as he sets it down in black and white; he corrects it here, improves it there, and all the while is getting new ideas, until at last his plan is satisfactory; it is not only what he had roughly in mind when he began, but it is better, it has grown in quality. And he himself has developed, for he has learned to do well that which if he had undertaken to put into the first crude shape which came in his mind, would have been an exceedingly poor thing. Thus the art of drawing is an important step in labor saving, for it enables the mechanic to know from the moment he takes his tools in hand exactly what he means to do; he wastes no strength, he has no false strokes to alter, he has no guess work; his hand and eye are the obedient servants of his intelligent purpose.

Since the constant aim of modern mechanical invention is to save human labor, why should not every mechanic learn in the exercise of his personal powers to do his work with less expenditure of time and strength, by being accurate and precise; by never using his saw or chisel twice where once might produce equally good results? All schooling has for one of its leading purposes the prevention of needless effort. What our fathers have learned by hard and painful experience is written in books, and impressed upon the memory of teachers, in order that the sons may not have also to learn it all by hard and painful experience, but may go on from where the fathers left off, into larger knowledge, and the manual training school teaches scientifically the results of many years' groping of hand-workers after the best methods of their trades; it takes the boy and girl from the point where previous generations stopped, and leads them directly forward to new conquests.

He then illustrates his theme by the example of the venerable Henry L. Fry, the artist whose wood carvings have brought fame to the City in which he lives, as well as developed there a love for his charming art; as was seen in the many carvings made by the

ladies of Cincinnati, and shown in the Woman's Pavilion of the Centennial Exposition, in Philadelphia, in 1876. He says:

The day of the artisan who works by rote and rule of thumb, is past. Brains has come to power, in mechanics as elsewhere. The hand-craftsman who does most honor to Cincinnati's skill has his best illustration in a certain little work shop upon Fourth Street, presided over by a venerable man of fine intelligence and thorough conscientiousness, from whose benches are sent out all over the Union some of the most exquisite wood carvings made anywhere in the land. And people of taste and education who know very little about Cincinnati's manufactures in other directions, are glad to adorn their houses with some of these bits of woodwork, whose money value would hardly be expressed by covering them over with dollars, and whose value in the good repute they give to our city's productive skill can not be measured in money. What this artisan does with his pieces of wood is to put into them intelligence, taste and delicate feeling. These qualities transform the simplest raw material into wealth and beauty.

The city and the nation which are to keep up with the age must have mechanics whose fingers are the servants of thoughtfulness and artistic sensibility. For years America has gone abroad to buy the most beautiful products of human industry. We have made a great deal of rough work, but the richest and most beautiful fabrics have largely been imported. And the reason plainly is that the older countries have made up for their comparative inferiority to our land in natural resources by giving to their workers, especially to the men and women who design and superintend their manufactures, a more careful and thorough technical training. The European schools have always been ahead of us in this direction. In these latter days we are becoming aware of our deficiencies, with the result that all over the land there is an awakening interest in the kind of instruction of which our Technical School of Cincinnati furnishes a modest example.

During the continuance of this Exposition, held in 1888, in commemoration of the Centennary of the City, the rooms of the school in the Music Hall were occupied by exhibits; and the autumn session was opened in temporary quarters in one of the District School Buildings of the City, allotted to its use by the Board of Education.

Mr. George R. Carothers, resigned the principalship in July 1888. In August, Mr. L. R. Klemm, Ph. D., was made Principal.

The Commercial Club, at a Banquet given in honor of one of its members, subscribed nearly \$35,000 as a fund for the school; which was subsequently increased to \$50,000.

A new Board of Directors was elected, chiefly of donors to this fund. The debts incurred were liquidated and it was proposed that the equipment of shops and laboratories should be largely increased.

The school it was expected would soon become self sustaining, so far as the running expenses are concerned.

The following extracts are taken from the report by Dr. Klemm, the new principal of the school, as given in the catalogue for 1888-1889.* The school with its largely increased attendance and its assured fund, bids fair to become a permanent institution.

* Second Annual Catalogue of The Technical School of Cincinnati, O., 1888-1889. Pp. 42.

REPORT OF THE PRINCIPAL.

CINCINNATI, December 1, 1888.

To the Board of Directors of the Technical School of Cincinnati:

GENTLEMEN: It affords me great pleasure to submit to you this, my first report of the progress of the Technical School, accompanied by such suggestions and propositions for improvement as have been found to be urgent by the entire faculty.

Previous to the opening of the school an examination for admission was held. All the pupils examined were admitted, two on condition that if they should prove incompetent to go on with the work to be done they should voluntarily withdraw. At this date, I am happy to say that the faculty, in consideration of the faithful work these pupils have since performed, agreed to withdraw the condition and regard them as having complied with the rules laid down by the Executive Committee.

The number of new pupils enrolled during September is forty-five, of which forty-one entered the first year's course, and four the second year's course. Of the fifty-three regular students remaining at the close of the last year, thirty-seven students and one special student returned, making the total number of pupils this year eighty-three.

Class III. 18 Boys. Class II, 21 Boys, 2 Girls. Class I. 39 Boys, 2 Girls. Special. 1 Student.

The school opened on the 10th of September with a detailed programme of exercises in force. The Centennial Exposition being in possession of our rooms in Music Hall, we were enabled, by the courtesy of the City Board of Education, to occupy the third floor of the Fifth District School. This location is quite convenient, so far as the academic and drawing departments are concerned, but the manual training department suffered from want of room. It was found desirable to send the third year's class to the Exposition every day, where a gas motor was available for the work in turning. This coming and going, as well as the want of free elbow room, is not conducive to the maintenance of strict discipline. Still I am happy to say that the pupils, despite the disadvantages under which the school had to labor, maintained order quite satisfactorily. In the efforts to keep order I am particularly indebted to the teachers, who worked zealously to that end.

On the whole the quality of our pupils in the new first year's class is better than was expected. In literary attainments they are superior to those of the first two years. I attribute this to the fact that the rules for admission were strictly adhered to, and also to the fact that parents are beginning to see that a manual training school is not a refuge for refractory or indolent pupils, but requires of its students as much application and continuous honest effort as does the course in any academic institution of equal rank.

We consider our school a high school minus the dead languages, plus manual training; hence insist upon a thorough preparation for the high school as a condition for admission.

The general plan of the school and its course of study have not been changed, except in so far as the additional class imposed more work upon the teachers, and made a minute adherence to the daily programme necessary. The school is now organized in five divisions.

Class III. 18 Pupils. Class IIa. 12 Pupils. Class IIb. 11 Pupils. Class Ia. 19 Pupils. Class Ib. 20 Pupils.

The daily programme here submitted is carried out :

Daily programme.

Time.	I. Year.		II. Year.		III. Year.
	A Div.	B Div.	A Div.	B Div.	One Div.
9:00 to 9:10	Opening exercises.		Opening exercises.		Opening exercises.
9:00 to 9:55	Review Arith., Algebra.	Shop Work.	Algebra, Ge- ometry.	Drawing.	Geometry and Trigo- nometry.
9:55 to 10:40	Grammar, Composition, Am. History.	Shop Work.	Drawing.	Algebra, Ge- ometry.	Civil Government, Gen- eral History.

Recess of five minutes.

10:45 to 11:30	Drawing.	Review Arith., Algebra.	Shop Work.		German Language, English Literature.
11:30 to 12:15	Introductory Science, Physical Geography.		Shop Work.		Drawing.

Recess of thirty minutes.

12:45 to 1:30	Shop Work.	Drawing.	Rhetoric, Com- position, Eng- lish History.	Rhetoric, Com- position, Eng- lish History.	Chemistry.
1:30 to 2:15	Shop Work.	Grammar, Composition, Am. History.	Physics and Botany.		Shop Work.
2:15 to 3:00	German.	Study and Consultation. General Exercises twice a week.			Shop Work.

The branches of study are distributed among the teachers as follows :

Principal.—Drawing in Ia and Ib. Physical Geography in Ia and Ib. General History in III. German in Ia. General Exercises in all grades.

Mr. Booth, Class Teacher of III.—Geometry and Trigonometry in III. English Composition and Literature in III. Rhetoric and Composition in II. Introductory Science and Composition in Ia. and Ib.

Mr. Homburg, Class Teacher of II.—Algebra and Geometry in IIa. and IIb. Physics and Botany in IIa. and IIb. Chemistry in III. German in III.

Miss Anthony, Class Teacher of I.—Review Arithmetic and Algebra in Ia. and Ib. Grammar and Composition in Ia. and Ib. American History in Ia. and Ib. English History in IIa. and IIb.

Mr. Slicer.—Drawing in III., IIa. and II b. Shop-work in Ib.

Mr. Russell.—Shop-work in III., II. and Ia.

RECOMMENDATIONS.

As soon as the school is removed to its old commodious quarters in Music Hall, a more vigorous pursuit of the manual occupations will be inaugurated. In order to enhance the usefulness of the school, it is recommended to insert gymnastics into the curriculum, and to that end put up the necessary appliances, horizontal and

parallel bars, ropes for climbing, spring-bucks, etc. Most of these things can be made by the pupils as class exercises, and if a desirable space of the large hall at our disposal be partitioned off for the purpose of a gymnasium, the cost of this institution will be but trifling, while the benefits derived from vigorous physical exercise will add greatly to the usefulness and original design of the school, the founders of which aim at harmonious development of the human being, at healthy intellectual, moral and physical growth. I trust that the suggestion, which has the support of the entire faculty, will find the unanimous approval of the Board of Directors.

It is also recommended to provide Class III. with the necessary appliances for taking up the work in forging, so that the course as laid down for that class be not retarded.

The splendid donations that have been made to our school, toward fitting up a school museum, make it necessary to set aside a room for their safe-keeping. Educational appliances, such as means of objective teaching, models, charts, maps, drawings, casts, etc., are accumulating rapidly in our school. The room might be provided with shelving for the library, which is increasing in consequence of donations and purchases. Our apparatus for the study of physics and chemistry could be taken care of better if kept in a separate room, too.

A list of gifts to the Library and Collections of the Technical School follows—

Dr. Klemm, excusing himself from making original statements as to the value of manual training, by referring to his recently issued volume on "European Schools shown in their Results", appends to the Catalogue twelve pages of extracts from the writings of others upon the subject of the new departure in education. He quotes from Professor Huxley, Dr. Wm. T. Harris, Professor Woodward, Professor Nicholas Murray Butler, of New York; Professor H. H. Belfield, Col. Jacobson, and Mr. Charles H. Ham, the three latter from Chicago, Illinois; Superintendent Dutton, of New Haven, Connecticut; T. V. Powderly, and the Detroit Free Press.

After the close of the Centennial Exhibition, which during its continuance had occupied all the available room in the Music Hall Building, the school returned to its former home. The rooms occupied by it were then fitted up with new desks, work benches, tools, machinery, etc., under the direction of Dr. Klemm, whose practical ability was thus clearly demonstrated; while his success as a teacher and as director, was shown by the encouraging increase in the number of pupils attending. The following account of the action of the Commercial Club in raising the funds for the support of the schools, before referred to, and which made possible these additions to its equipment, preceded in the Catalogue the report of the principal. It is inserted here to perpetuate the names of these liberal friends of education who thus showed their faith by their works.

HISTORICAL SKETCH.

At a banquet given by the Commercial Club on December 1, 1888, in honor of Mr. Matthew Addy, the founder of the Addyston Steel and Iron Works near Cincinnati, the subject of industrial education was mentioned. Mr. Addy opened the

question with a strong appeal in behalf of technical and manual training, quoting the proverb: "He who does not teach his son a trade, teaches him to steal." Mr. M. E. Ingalls and others followed, urging that it had become essential to give to thinking labor in this city of diversified industries an impetus that would be felt through generations, by aiding an institution like the Cincinnati Technical School, and to do something to remove the anxiety of its founders and promoters in regard to its financial basis. The appeals of these gentlemen found an echo in the actions of the members of the club, for when a subscription list was started many of the gentlemen present responded to the appeal with great enthusiasm. More than thirty thousand dollars were raised within a few minutes and more was subscribed afterward. The liberal donation of Mr. Charles Schiff of ten thousand dollars created a deep impression. The following are the names of the subscribers:

Matthew Addy	\$1,000	Mrs. T. T. Haydock	\$1,000
Fred. & Wm. Alms	1,000	A. Hickenlooper	50
Allison & Smith	500	Geo. H. Hill	500
Mrs. Cath. L. Anderson	500	M. E. Ingalls	1,000
Jos. L. Anderson	100	Chas. H. Kellogg, Jr.	250
Larz Anderson	200	J. N. Kinney	1,000
W. P. Anderson	1,000	Mrs. Kate P. Leaman	1,000
W. J. Breed	100	Mabley & Carew	500
C. I. St. L. & C. R. R.	500	Alex. and Jos. McDonald ..	1,000
C. & O. R. R.	500	Thos. McDougall	250
B. S. Cunningham	1,000	James Morrison & Co.	250
W. L. Davis	100	James E. Mooney	1,000
J. K. Dimmick	100	Henry Pogue	100
W. H. Doane	150	Procter & Gamble	2,000
A. M. Dolph	1,000	Charles Schiff	10,000
Fechheimer Bros. & Co.	500	J. G. Schmidlapp	1,000
Chas. Fleischman	1,000	Stewart Shillito	1,000
Geo. W. Forbes	250	John L. Stettinius	1,000
J. W. Gaff's Estate	1,000	J. H. Stewart	250
Herm. Goepper & Co.	250	W. W. Taylor	50
W. A. Goodman	50	Victoria Cordage Co. (by G. Werner Loper)	1,000
W. M. Greene	100	A. B. Voorhies	1,000
G. P. Griffith	100	A. S. Winslow	250
Jos. L. Hall	500	John S. Woods	100
L. B. Harrison	1,000		

The following is a list of the original subscribers of the fund; they have aided the school from its first feeble beginning, with sums ranging up to a thousand dollars.

Ackerland, Max,	Doane, W. H.,	Hosea, L. M.,
Ackerland, Wm.,	Dolph, A. M.,	Ingalls, M. E.,
Addy, Matthew,	Dymond, R.,	Kellogg, Chas. H.,
Allison, James,	Ezekiel, H. C.,	Kirby, Josiah,
Alter, Frank,	Fechheimer, Henry S.,	Lane & Bodley,
Aub, Dr. Jos.,	Gaff, T. T.,	Leonard, L. A.,
Baldwin, Ammi,	Gaul, J. L.,	Lowe, Miss L. C.,
Bloch, Edw.,	Glenn, James M.,	McAvoy, P.,
Boyden, H. P.,	Goepper, H.,	McDonald, Alex.,
Breed, W. J.,	Goodale, L. C.,	McFarlan, F. B.,
Carothers, Geo. R.	Goshorn, A. T.,	Mitchell, Robt.,
Cox, Sam'l C.,	Gray, Wm. F.,	Moch, A.,
De Gollyer, Geo. H.,	Hadden, L. M.,	Mooney, Jas. E.,
Dexter, Julius,	Hooker, J. J.,	Murdock, J. G.,

Neff, P. R.,
Nichols, Edw.,
Oliver, Henry,
Oskamp, C.,
Osler, A. W.,
Perrin, Mrs. M. J.,
Pluemer, A.,
Procter, H. S.,

Robinson, W. L.,
Schmidlapp, J. G.,
Sebastian, May & Co.,
Sechler, T. M.,
Sextro, J. G.,
Shillito, Stewart,
Shinkle, Bradford,

Short, Chas. W.,
Sullivan, Miss Christina,
Waite, C. C.,
Weir, L. C.,
Wessel, A.,
Woods, John S.,
Wulsin, L

BOARD OF DIRECTORS.

At the Annual Meeting of Stockholders in December, 1888, the following members were elected Trustees: A. M. Dolph, M. E. Ingalls, H. T. Procter, Levi C. Goodale, A. B. Voorhies, Chas. Fleischman, J. G. Schmidlapp, T. T. Gaff, B. S. Cunningham, Chas. Schiff, W. L. Robinson, W. P. Anderson, Herm. Goepper, Stewart Shillito, Drausin Wulsin.

Officers of the Board.—M. E. Ingalls, President. A. M. Dolph, Vice-President. T. T. Gaff, Treasurer. Miles T. Watts, Secretary.

OBJECT OF THE SCHOOL.

As stated in the articles of incorporation, the object of this school shall be to furnish pupils instruction and practice in the use of tools, Mechanical and Free-hand Drawing, Mathematics, English Language and the Natural Sciences; to develop skill in handicraft and to impart such a knowledge of essential mechanical principles as will facilitate their progress in the acquirement of manual trades.

Inquiries concerning admission should be addressed to the Principal, L. R. Klemm, Technical School, Cor. Elm and Fourteenth Streets, Cincinnati.

Faculty.—L. R. Klemm, Ph. D., Principal, Geography, History, Language, Drawing. E. R. Booth, Ass't Principal, Mathematics, Language and Literature, Shopwork. Fred. Homburg, Natural History, Physics, Chemistry, Mathematics. Etta I. Anthony, Mathematics, Language, History. Will H. Slicer, Drawing, Shopwork. Louis S. Russell, Shopwork.

Calendar. *School year 1888-'89.*—Third year opens September 10, 1888. Holiday, Thanksgiving, November 29, 1888. Christmas Vacation, December 22, 1888, to January 7, 1889. Holiday, Washington's Birthday, February 22, 1888. Holiday, Decoration Day, May 30, 1889. Closing Exercises and Exhibition, June 22, 1889.

Mail address of the school:—Technical School, Cor. Elm and Fourteenth Streets, Cincinnati.

The Board of Trustees in their report for the year 1889-'90,* announce several important matters affecting the school. Among these the securing of the north wing of Music Hall for the permanent home, and the receipt of over \$13,000, the amount subscribed for the use of the school, give warrant for its permanency. A change in the principalship, the reduction of the full course from four to three years, and other matters, are noted; as follows:

On account of the resignation of Prof. L. R. Klemm,† it was decided to place the management of the school in charge of a Director, and the services of Mr. James B. Stanwood were secured for this purpose. He entered upon his duties June 15.

* Third annual catalogue of the Technical School of Cincinnati, Ohio. 1889-'90. Pp. 24.

† Professor Klemm was, shortly after, appointed to a position as a "specialist" in the U. S. Bureau of Education, at Washington, D. C., where he still remains.

During the months of July and August a summer class was started in the new blacksmith shop, principally to give to regular pupils of the school this course, which owing to lack of proper equipment it has been impossible to provide at an earlier date. Incidentally a number of additional special pupils were admitted, thus forming a full class.

The fitting up of Power Hall for school purposes and the purchase of necessary tools and equipment incurred a cost of \$13,245.81. Next year the expenditure for these purposes will be confined to the purchase of such sets of tools, school furniture and physical apparatus as the increased attendance will demand.

In October it was considered expedient to give to the public a general reception, so that they could obtain a clearer idea of the scope and value of the school. This reception was held on the 18th of the month in the school apartments from 2 until 4 p. m.; the different shops and classes were then in active operation. A large number of visitors availed themselves of this opportunity, so that the afternoon was in every way a success.

The Director, Mr. Stanwood, reports the school to be in a very satisfactory condition. The shops are all in active operation, being about fully equipped. The pupils are thoroughly in earnest and are manifesting great interest in their work. They find that the change of employment from class to shops relieves immensely the monotony of school life.

There have been enrolled up to February 1 1890, 119 pupils; of these

53.....	are in the 1st year's class.
39.....	" " 2d " "
10.....	" " 3d " "
9.....	" " 4th " "
8.....	are special students.

These figures indicate that the public is appreciating the advantages our school offers; the thoroughness of the class-work and the discipline which shop work affords are becoming known.

Your Board have decided that, after this season, three years shall constitute the complete work of the school. It is believed that the work Manual Training Schools are called upon to perform can be accomplished in this time. Graduates are not too old to go at once to work, or they are well fitted to enter the higher scientific schools of the country if they so desire. The reduction in tuition will make the school more available to a larger number.

There are nine teachers employed, including Mr. E. R. Booth, the principal, who has general charge of the classes and their work. Three teachers, skilled artisans, are instructors in the carpenter, blacksmith and machine shops, respectively.

An expenditure of about \$30,000 is recorded, of which 13,000 was expended for changes in the building to adapt it to the purposes of the school, and for the plant of machinery and general equipment.

In their report for the succeeding year, the Trustees say:

The full value of such an institution as this can only be realized when its works begin to bear fruit; this can be ascertained when a sufficient number of pupils has been graduated to testify to the worth of this kind of training. Last year we graduated our first class of eight members. These were able at once to secure good positions, and the Director, Mr. Stanwood, reports that he is continually receiving applications for young men trained in this practical manner.

In taking into account the progress made, it is well to remember that, although this is actually the fifth year of the school's existence, it is only the second year in which it has possessed fully equipped shops and has followed a definite course of work.

A public exhibition of the pupils at work was held in the school departments, June 18th, 1890, morning and afternoon; a large number of people availed themselves of the opportunity for making us a visit.

As to the condition of the school, we have a very satisfactory class of students, and the teachers who are thoroughly in earnest, work harmoniously together in full sympathy with the movement.

47.....	are in the first year's class.
42.....	“ “ 2nd “ “
13.....	“ “ 3rd “ “
7.....	“ “ 4th “ “
10.....	are special students.

They also announce that twenty-seven friends of the school have contributed \$75.00, each, to give 27 free scholarships to public school pupils for one year.

The latest catalogue* at hand is a handsomely printed pamphlet with full page views of the work shops. The Report of the Board of Trustees describes the condition of the school as follows:

Gentlemen:—It is with pleasure that we can state that the condition of the Technical School this year shows marked improvement.

There are now enrolled 152 scholars, of whom 72 are in the first year, 38 in the second, 25 in the advanced year, and the remaining 17 in preparatory or special classes. Of the whole number 20 enjoy the privilege of free, or partially free scholarships; while from the remainder is received the sum of \$10,500 in tuition fees.

Three years ago, there were only 80 pupils, and the tuition fees amounted to but \$5,400.00. The attendance and income have thus been doubled.

We have now eight teachers, three are shop instructors, four class instructors, and one is in charge of the draughting department.

We have graduated so far, 14 pupils; this year, in our graduating classes, there are 25 pupils; so that we feel that our work is beginning to bear its fruits.

The free scholarships for pupils of the “Intermediate” public schools, were continued by subscriptions made by friends of the school; a list of the subscribers is given. It was also found that the school needed additional funds, and a subscription of some twenty-five thousand dollars, to be paid in five annual instalments, was readily secured. The list of subscribers to this fund is also given. The estimated annual running expenses of the school is about \$15,000.

The following statement of the equipment, shows the development of the school in this respect.

EQUIPMENT.

The equipment of the work shops is as follows:

Carpenter Shop.—52 cabinet-makers' benches; 15 speed lathes; 1 rip and cross-cut circular saw; 1 grindstone; 2 emery wheels; bench tools for 90 boys, turning tools for 42 boys.

*Fifth annual catalogue of The Technical School of Cincinnati, Ohio. 1891-1892, Illustrated. Pp. 32.

Blacksmith Shop.—19 forges; 19 anvils; 2 vises; 1 blower; 1 exhaust fan; 1 bellows; tongs, hammers, flatters, fullers and swages, etc, for 54 boys.

Machine Shop.—1 engine lathe, 20-inch swing, 10-foot bed; 1 engine lathe, 17-inch swing, 8-foot bed; 5 engine lathes, 14-inch swing, 5-foot bed; 1 Brown and Sharpe speed lathe; 1 Brainard milling machine; 1 Brown and Sharpe cutter and reamer grinder; 1 26-inch by 7-foot Gray planer; 1 14-inch Sharper; 1 26-inch Lodge-Daviss drill press; 1 Slate sensitive drill; 1 Diamond wet emory grinder; 1 Washburn twist drill grinder; 1 52-foot bench with 8 vises; lathe and vise tools for 24 boys; also necessary chunks, boring bars, taps, dies, reamers necessary for same. The power is derived from a 5'x8"x12" compound steam engine, built by the pupils of the class of '91, taking steam from two tubular boilers in the basement.

The following interesting word picture of the daily life of the scholars accompanies the pictorial showing of their workshops.

SKETCH OF A BOY'S LIFE AT TECHNICAL SCHOOL.

A boy, in his first year at our school comes at half past eight in the morning, goes first we will say to an hour's lesson in algebra, which he has prepared at home; then comes an hour in the draughting room followed by two hours in the carpenter shop where he works from drawings he has made himself. After this exercise at the bench, comes a half hour for luncheon. In the afternoon, refreshed by manual labor, he spends an hour in the science class, where he may be performing some experiment of his own, or reporting upon the experiments of his class-mates. The last hour is devoted to English; perhaps it is a lesson in American History, or a speech delivered to his class-mates upon some assigned topic. Tomorrow will be exactly like today in its essential features.

In the second year, instead of working at the bench, he swings a hammer at the forge. Geometry is substituted for Algebra. He continues with his other studies and takes a full year's course in Chemistry, English Literature, and History.

The third year finds him in the machine shop, where this year the boys are building a triple expansion steam engine for the Columbian Exposition. Physics has taken the place of Chemistry; Trigonometry of Geometry, and a study of the Constitution of the United States, and Political Economy complete the English course.

This is industry, not drudgery; the regular grind of book-work distasteful to active minds is not here; still there is enough to occupy a healthy mind and a healthy body for three years. The boys like it.

During the Christmas Holidays last passed the carpenter shop was opened on four occasions and it was filled with boys eager for work.

A collection of pertinent brief excerpts from the writings of leading educators fill three or four pages of this catalogue.

BOARD OF TRUSTEES.

At the annual meeting of the Stockholders in January, 1891, the following members were elected Trustees:

A. M. Dolph,	T. T. Gaff,
M. E. Ingalls,	B. S. Cunningham,
H. T. Procter,	Peter Rudolph Neff,
Levic Goodale,	W. L. Robinson,
A. B. Voorhies,	W. P. Anderson,
Chas. Fleischmann,	Herman Goepper,
J. G. Schmidlapp,	Stewart Shillito,

Drausin Wulsin.

OFFICERS OF THE BOARD.

M. E. Ingalls,.....	President.
A. M. Dolph,.....	Vice-President.
T. T. Gaff,.....	Treasurer.
Miles T. Watts,.....	Secretary.

* * * * * *

Inquiries concerning admission should be addressed to the Director. James B. Stanwood, Technical School, Cor. Elm and Fourteenth Streets, Cincinnati.

FACULTY 1891-1892.

James B. Stanwood, M. E., Director. Evans St., Mt. Auburn.
 E. R. Booth, A. B., Principal English and Political Science. Wyoming, Ohio.
 H. F. Brewer, Physics and Chemistry. 377 West Seventh Street.
 T. L. Feeney, Mathematics and Science. Ivanhoe, Ohio.
 Miss H. B. Whittaker, Mathematics and History. 21 Clark Street.
 Will H. Slicer, Drawing. Morris Street, Walnut Hills.
 Horace D. Chipman, in charge of Carpenter Shop. Home City, Ohio.
 Fred H. Von Eye, in charge of Blacksmith Shop. 237 Betts Street.
 Gustav F. Hammer, in charge of Machine Shop. 46 Fosdick Street.

* FREE EVENING DRAWING CLASSES IN THE CITIES OF CHICAGO, COLUMBUS, AND ERIE.

The interest felt in the introduction of the study of drawing in the public schools and the more general realization of the value of a knowledge of drawing to all mechanics, which followed upon the movement in Massachusetts, resulting in the passage by the Legislature of that State in 1870, of the "Act relating to free instruction in drawing," led to the opening in various towns and cities, in several States, of free evening drawing schools, modelled after those thus established by Law in the cities and larger towns of Massachusetts, for the purpose of giving instruction similar in kind to that given in the night classes of the Mechanics Institutes, as already described. Full accounts of these Massachusetts Free Evening Drawing classes, with programmes of the courses of studies, etc., will be found in Chapters II. III. and V. Part I of this Report.

A somewhat extended description and history of "The Free Evening Industrial Drawing School" in Columbus, Ohio, and a brief account of the early opening of such a class in Erie, Penna., which follow, will illustrate the means adopted by the school authorities of these cities, to furnish such instruction to mechanics and others desiring it. It is impossible, from want of space, to attempt detailed descriptions of the many similar classes organized throughout the country, either by the school authorities, or by associations of citizens, and having a longer or shorter existence as public interest waxed and waned, or, as they were, or were not, superseded by other and better instrumentalities; for it has often happened that a great step forward in extending suitable facilities for the promotion of

this new education has been indicated by the closing of these temporary classes.

With a brief history of the schools in these three cities of Chicago, Columbus, and Erie, must end our notice of these classes;—valuable as make-shifts, but which the prevalence of graded instruction in elementary drawing in the common schools ought long since to have made needless.

THE CHICAGO EVENING HIGH SCHOOL.

The Board of Education in Chicago, opened in September 1884, The Chicago Evening High School, for gratuitous instruction in Mechanical Drawing and Mechanics. The school was open five evenings in the week during the season. The expenses were paid from the City appropriations for night schools, and amounted to \$70 per month. There was an attendance, the first session, of 38 pupils, 3 of whom were ladies.

I am indebted to the courtesy of Mr. H. H. Belfield,—the present Director of the newly founded Chicago Manual Training School, and who was at one time in charge of The Evening High School,—for the following succinct account of the Night Schools of Chicago, and of the Evening Drawing School to the present time. Under date of July 25th. 1884, he writes :

The first public evening schools held in Chicago were organized in the winter of 1856-7, the teachers giving their services gratuitously.

This organization was abandoned in the spring of 1857, and nothing further was attempted in this line till the autumn of 1863, when the public evening schools were again opened, and supported by public funds.

No drawing was taught in the evening schools; nor in the day schools till September 1869.

In the autumn of 1868 the Chicago Evening High School was opened in the Dearborn School Building, under the charge of Mr. Selim H. Peabody, at that time (and for years subsequently) a teacher in the Chicago High School, and now, (1884,) the Regent of the Illinois Industrial University. Instruction was given in Mathematics, Bookkeeping, Mechanics, and Geometrical and Mechanical Drawing; the last two subjects (Mechanics and Drawing) taught by Dr. Peabody himself.

The fire of 1871, caused the suspension of all the Evening Schools; the Evening High School not being reopened till the autumn of 1874, again under the care of Dr. Peabody. The school has continued in session during the winter months, (usually opening in October and closing in February or March,) except during the winters of 1876-7 and 1879-80, when want of funds prevented the sessions of all the evening schools.

During Dr. Peabody's principalship the total enrollment varied greatly, reaching at one time 264 pupils. Only a small part of this number, however, received instruction in Drawing. Much of the work in Drawing was of an excellent character; and a volume exhibited at the Centennial at Philadelphia attracted considerable attention.

In October 1878, Dr. Peabody having removed to the East, the school was reopened under the charge of Mr. James H. Brownell, also a teacher in the High School. Mr. Brownell was followed, in October 1881, by Mr. Henry H. Belfield, at that time Principal of the North Division High School.

Mr. Belfield was succeeded in October 1883, by Mr. Oliver S. Westcott, who also became Principal of the North Division High School.

The first year after Dr. Peabody's resignation, Drawing was not taught; since that time, instruction in Drawing has been regularly given by Messrs. Hanstein, Mayer, Weiskopf, and Hyde.

Instruction in Drawing in the Chicago Evening High School has always been strictly Geometrical and Mechanical. Nothing has been attempted in any other department of the art, although landscape, portrait drawing and crayon work have been done in the High School.

The pupils have been chiefly young men engaged in mechanical pursuits during the day, who have been earnest students, and have undoubtedly been much benefited by the really excellent instruction received. The classes have never been large, seldom numbering more than 24 pupils in attendance on any one evening.

The funds for the support of the school are appropriated by the City Council, year by year, and are wholly distinct from the appropriation made for the day schools. When the Council has failed to make the necessary appropriation, the evening schools have necessarily been suspended for that winter.

That the Evening High School has failed to give satisfaction to the authorities is evident from the position taken by the two last Presidents of the Chicago School Board. In his Report for 1883, Dr. Norman Bridge, at that time President, says: "I am reluctantly forced by the facts in connection with the Evening High School, to agree with my predecessor, that neither the 'necessity nor the results justify the expenditure.' It ought to be discontinued.

FREE EVENING INDUSTRIAL DRAWING SCHOOL, COLUMBUS, OHIO.

Drawing was introduced into the schools of the city early in 1874. It is taught in every grade, and by the regular teachers, except in the High School, the teachers themselves receiving instruction in theory and practice once a fortnight.

In November of the same year, a free evening industrial Art School for Mechanics, and others, was opened, under the supervision of the Board of Education, three evenings a week, a small collection of flat examples and models for free hand drawing being provided.

This school was attended by seventy-five pupils—25 of whom were ladies.—A much larger attendance is anticipated the coming winter. This action by the School Board of Columbus, illustrates the manner in which various towns and cities, in different states and sections of the country, are trying the Massachusetts experiment for themselves.—

It should be generally understood, that these evening drawing schools for mechanics, are merely endeavors to partially supply to adults the elementary instruction which should have been given in childhood—they are, at best, but poor substitutes for that elemental training in drawing which all public school children should receive and which they now have in Massachusetts; such public school teaching will soon make evening drawing schools for Mechanics needless.

The following account of this school is from the Fourth Annual Report of Mr. R. W. Stevenson, City Superintendent of Public Instruction for 1874-'5:

Free Evening Art School. This school was opened November 18th, for the benefit of all who desired to take a course in freehand and industrial drawing. Professor W. S. Goodnough, Superintendent of Art Education, in the city schools, was appointed teacher. He arranged the following course of study. Freehand outline drawing from copies and blackboard, with the principles and exercises in elementary designs; also memory and dictation drawing, plane geometrical drawing with instruments, of problems given by the teacher. Model and object drawing from copy, and solid models; perspective drawing; projection drawing.

Freehand Drawing.—Drawing of ornament in outline from large copies of foliage and the human figure; from the plaster cast and common objects; designing in half tint or several tints of one color; drawing from memory, dictation, etc. Shading from the copy of foliage, the human figure, solid models, casts, etc., in crayon or Sepia; botanical analyses for design and applied design in color for industrial purposes.

Mechanical Drawing.—Architectural details in building, construction and machine drawing. Orders of architecture, the proportions by which each order can be constructed, the names of the parts, and the details of building, as the joints used in carpentry, construction of floors, door and window framing, partitions, roofs, etc., designs of plans, elevations, sections, and perspective views of houses. The details of machines, as bolts, nuts, screws of all threads, wheels toothed and beveled, machines, such as lathes, drills, blocks, pulleys, engines, etc.

Number in different trades and professions—Occupations and number of each.

Teachers	18	Blacksmiths	3
Carpenters	10	Tinners	3
Machinists	10	Carriage painters	2
Clerks	5	Jewelers	2
Civil engineers	5	Photograph finishers	2
Students	4		

Twelve other occupations were represented, in all 27.

Number of nights in session	43
Whole cost of tuition	\$112.50
Cost per pupil	3.63

The drawings of the class were exhibited in this office, and examined by the school authorities, professionals, and the citizens generally.

The expectations of all were more than met. Contributions to the exhibition were made by all the members of the class who were able to attend with any degree of regularity. The progress made by many was surprising, taking into consideration the want of a suitable room and the defective system of lighting. Almost all the various trades were represented and by persons who were not desirous of changing their employment, but who wished to prepare themselves better for the work in hand. The course in drawing which was taken in the evening school and is pursued in the day school is not, as many think, for the purpose of giving to the pupils an accomplishment of no practical value. Drawing is important because this study will largely assist the children in the public schools who hereafter must earn their support by trades which require some knowledge of the principles of drawing.

There is no question that if the artisans and mechanics of our city could have opportunities for instruction in freehand and mechanical drawing, in free evening schools with competent teachers, the value of their labor would be greatly increased. Columbus is rapidly becoming a manufacturing city and in this direction her future prosperity and growth lie. She ought therefore to offer every inducement possible to tradesmen of every class to settle in our midst, to extend to them every facility

for improving themselves, and to encourage skilled labor in every department of handicraft and the arts of design.

To this end I beg leave to recommend the permanent establishment of a Free Evening Art School, to be kept open during the school year for the benefit of artisans, mechanics, machinists, civil engineers—for all, in short, who look forward to the arts of design and mechanic arts as the occupation of their lives. The expense need not be great. A small sum will purchase the necessary materials, the rent of a room located at a central point, easy of access, properly lighted and suitably fitted up, and the salaries of teachers need not exceed the sum of fifteen hundred dollars per annum. Can this sum of money be expended in any other way that will produce richer results in forwarding the vital interests of our prosperous and growing city? This question is respectfully submitted for your favorable consideration and early action.

The report of Mr. Goodnough, the Superintendent of Drawing, shows some of the inconveniences under which the work of the pupils was done.—

About the first of November, the Free Evening Art School, for the benefit of those needing a knowledge of drawing in their professions, was opened in a room in the High School. For the first month or more the room was full, there being an average attendance of forty or fifty pupils. The arrangement of the light was so poor and there was so little of it, that the number dwindled down to thirty in January. Many came a half hour early to get a front seat in order to see. Numerous were the complaints from those in the back part of the room, as during the latter part of the evening, their eyes were so tired by two hours' constant strain, that they had to draw by guess. In many instances it was impossible to be sure whether the lines were made where they wanted them or not. Another problem we were unable to solve was, how to accommodate upon the surface of a desk containing 396 square inches, a drawing board with paper stretched upon it and occupying 300 square inches, a mouthed copy of 221 square inches, and still have room for pencils and other materials, without a constant falling of copy or pencils. If a vacant room could be rented for this school for the four or five months it is in session, until the High School building is enlarged and a suitable art room provided there, desks could be procured having an upright wire frame work against which the copy could rest. A suitable arrangement of light could also be made. The school is already provided with a few geometrical models and flat examples of outline. Some plaster casts and shaded examples of ornament are needed at once, as many of the pupils of last year have signified their desire to continue their study. This they can not do without more advanced material. An instructor, no matter how efficient, is not worth much unless he have tools to work with. He may do something, but not a tenth part of what he could with proper equipments. These things will be wanted in a short time for instruction in the High School, in the Normal School, and in the Teachers' Classes. The same set would do for all and it is something that would last; once provided, always provided. At the close of the school in April, the works of the students were exhibited at the rooms of the Board of Education. They attracted considerable attention. About five hundred people were in attendance during the few evenings the room was open.

Superintendent Stevenson thus records the second year of the school.

FREE EVENING ART SCHOOL.

The course of instruction in the elementary class of this school for the year embraced the following subjects: Free-hand drawing in outline from flat copy, ornament, foliage, animal forms, and the human figure, model drawing in outline from

the solid, geometrical drawing, perspective, and the principles of decorative design.

The majority of the members of this class had never received any instruction, and were entirely ignorant of the subject, having to commence with the very first principles.

In the advanced class which was composed of students of the year before, the above subjects were pursued in more advanced stages, and instruction was given in light and shade, the pupils making very creditable drawings in crayon point, stump, and monochrome. Applied design was taken to some extent, color being used.

The progress of the school was very satisfactory, considering the disadvantages resulting from the poor arrangement of light, inconvenient desks, and one teacher having, most of the winter, to teach with part of the class in one room, and the remainder in another. The students worked earnestly and enthusiastically.

* * * * Number of occupations represented, 22.

The number enrolled during the term was, men, 79 ; women, 38 ; total, 117.

The Board of Education opened none of the night schools during the winter of 1876-'7, and the evening drawing school shared the fate of the others. The Superintendent of Drawing in his report for 1877-'8, has the following reference to the school.

Last year, as there are no gas fixtures in the Drawing Room, the Evening Art school was discontinued. It is to be hoped that this school will be reopened, as from the constant inquiries about it, its value must have been appreciated. That these schools are of great value in any manufacturing community, is evident from the fact, that, for the last eight years Massachusetts has required them to be supported in every city having over ten thousand inhabitants. The measure has been effectively carried out, and reports state that it is having a marked effect on the manufactures. Such schools are held during the Winter months in Cincinnati, Cleveland, and Dayton, in this State, and in most of the large cities of other States. There should be two classes, Mechanical and Freehand, each meeting at least two evenings a week.

Respectfully,

W. S. GOODNOUGH,
Supt. of Drawing.

The Columbus Art Association, an account of which will be found elsewhere in this Report, was organized in the autumn of 1878, followed by the opening of an Art School, in January 1879. In connection with this school an evening class was organized at the nominal cost of 10 cts. a night for tuition, and the Free Evening Drawing School of the Board of Education was definitely abandoned.—The general introduction of drawing in the public schools having, it may be assumed, diminished the necessity for night schools, for the rising generation of pupils ; while the cheapness of the tuition offered by the school of the Art Association placed it within the reach of all older persons who would be likely to profit by such opportunities. This school then, having served its purpose, of a temporary make shift, gives place to better instrumentalities.

FREE EVENING DRAWING SCHOOL, ERIE, PENNSYLVANIA.

The School Board of this City organized in October 1873, a Free Evening Drawing School for giving lessons to Mechanics and others, in Architectural, Mechanical, and Freehand Drawing. This school, under the charge of Mr. H. E. Ludwig, and furnished with a small collection of Models and Drawings, has been quite successful.

Sixty-two persons attended—two of whom were females, a much smaller proportion than in the similar class, in Columbus, where one third of the class were ladies.

An exhibition of the work of the scholars was open for two weeks in January 1875.

From recent information January 1889—given by Mr. H. S. Jones, Superintendent of City Schools, it appears that the Evening Mechanical Drawing School was continued, with some interruptions, from 1873 until January 1884, when the Mechanical Drawing School authorized by the Board of Education and open day and evening, was begun. The following account of the founding and purpose of this latter school is taken from the Report of the Superintendent for the year 1884.

V. MECHANICAL DRAWING SCHOOL.

Unsystematic efforts had been made off and on, for a number of years, in teaching mechanical drawing to apprentices and others in evening schools; part of the time the results were really good; but as instruction in this kind of drawing was not adopted as a part of the system, it took but feeble root, and at times was overlooked if not ignored.

The Board in its action of December 6, 1883, gave mechanical drawing a prominent and well-deserved place among the studies pursued in the schools.

The school was planned to be opened day and evening, the day sessions for the advanced pupils of the grammar grades, who might choose to attend, and others not attending school who were able to give part of the daytime to study; the evening sessions for apprentices and others employed during the day. The distinguishing feature of the school is the prominence given to teaching how "to read" working drawings; mere drawing holding a secondary place to "reading," for the practical reason that but few expert draughtsmen are needed, and but few have the time and patience necessary to enable one to reach a high grade of excellence in the art, and that every workman should be able to read the ordinary drawings of our shops and factories.

The school was opened in January, 1884, and in attendance, enthusiastic interest and practical results, the beginning made proved to be highly encouraging; the average monthly enrollment being ninety-nine.

The Erie reports are issued biennially. The following is the report of this school for 1886.

MECHANICAL DRAWING SCHOOL.

This department has improved in two important features: better work is being done, and the attendance covers a wider mechanical field; that is, more of our industries are represented in the school. The school is open night and day, thus accommodating every boy and young man accordingly as each may be able to control his time.

The statistics of this department shows that *two hundred and twenty-three* different persons have been enrolled during the last two years. Of this number *ninety-eight* learned to "read" ordinary shop drawings, and to handle drawing tools in elementary drawing; *eighty-six* learned to "read" working drawings with facility, and became enabled to make drawings with a fair degree of correctness; *thirty-nine* not only became able to "read" well, but able to execute sufficiently well for practical purposes, for shop use.

When the expense and the results are taken into consideration there is no room for question as to the practical value of this department in our system of education.

The first and chief effort of the instruction has been to enable boys to "read" ordinary shop drawings, following this up with teaching and practice in the art of mechanical drawing, the purpose being to help the many as well as the few.

In 1888-'89, Mr. George Zwilling, is reported as the principal in charge of this school, with one assistant.

The Superintendent, says of this school under date of January 23rd, 1889, "The Mechanical Drawing School has a firm foothold in our school system. When the new large building, now in course of erection, is finished the school will have accommodations of its own adapted to its special work which will do much toward its growth and efficiency. It is doing useful though not surprising work. It moves on in the line of permanent educational evolution, roots as well as branches, leaves and flowers."

It will be seen that practical results are sought and it is claimed attained.

In the report by the Superintendent of the City Schools of Erie, issued in 1891,* for the three previous school years, the following notice of the attendance, and instruction, in the Mechanical Drawing School, appears.

In the financial statement, by the clerk, of school expenses the total cost of this school for the year, is given as \$1,196.00, of which \$709.50 was paid to the teachers. In the tables of schools and teachers which are given for three years, 1888-89, 1889-90, 1890-91, this school appears only in the table for 1890-91. Mr. George Zwilling is still in charge. There were two teachers, and 93 pupils, of whom 6 were girls.

THE MECHANICAL DRAWING SCHOOL.

The enrollment for the year was 126. The work has been of a thoroughly practical character. The pupils are mainly boys and young men from our shops. The following were the chief points of instruction for the year:

(1) Principles of working, drawing and use of instruments; (2) Geometric problems; (3) Development of surfaces and intersection of solids; (4) Simple projections; (5) Machine details, from models and from sketches; (6) Screws, bolts and nuts; (7) Pulleys; (8) Couplings; (9) Pillow block and hanger; (10) Gearing; (11) Crank; (12) Eccentric; (13) Assembly drawing; (14) Shop drawing; (15) Machine designs.

*Public Schools, Erie, Pennsylvania. 1888-89, 1889-90, 1890-91. Pp. 119.

ARCHITECTURAL DRAWING.

(1) Geometric problems; (2) Geometric solids, plans and elevations; (3) Framework, joints; (4) Section through, partitions, doors, windows; (5) Plans and elevations of cottage; (6) Framing plans of cottage; (7) Detail of frame house; (8) Scale drawings of buildings from measurements and sketches.

FREEHAND DRAWING.

Class of Females.

1. Principles of freehand drawing of points, straight and curved lines shown on solids, connecting of lines to figures, from objects.
2. Drawing from copies and inventing forms.
3. Drawing of domestic utensils.

APPENDICES.

APPENDICES.

GENERAL INTRODUCTION.

Sufficient reference was made in the preceding volume to the changes made necessary in the form of issuing the present Report, by the intercalation of that additional volume, demanded by the rapid development of the movement for introducing Manual training, and other forms of Industrial, and Industrial art training, in the public common schools of the United States.

The delay thus caused in issuing the volume then already prepared containing an account of the schools supplementary to the public schools, which had been founded and supported by the voluntary associations of citizens in the several cities; and of the Institutes, founded by individual philanthropists, with a like purpose of affording higher industrial, technical, and art training than could then be had in the public schools; as well as a statement of the facilities afforded in the U. S. Land Grant Colleges, for industrial and technical training; each of which classes of institutions were included in that volume, has compelled the addition of some account of the later development of these various institutions; this of necessity, has so increased the amount of material that it has seemed expedient, for the convenience of readers of this Report, that these histories, with their appropriate appendices, should be issued in two volumes of more convenient size rather than in a single bulky book. Parts III. and IV. then will contain the histories of these institutions. Part III. is given to the history of the several Mechanics Institutes and of several of the institutions founded by public spirited philanthropists. Part IV. contains the accounts of the higher technical schools and the mechanical and technical departments of the U. S. Land Grant Colleges.

These changes necessitate like changes in the arrangement of the Appendices. In the volumes of this Report, while an effort has been made to arrange the several features of the new educational methods in accordance with their obvious relations to each other; it has, nevertheless, been kept in mind that this Report is a Unit; whose component parts combine in one consistent whole.

The connection between the introduction of drawing in the public schools; the several phases of elementary technical training; of higher technical training in Mechanic Arts; of Industrial-Art training; of Schools of the Fine Arts, and of the public Technical and Art Museums, is a vital one; never to be lost sight of in the several volumes which constitute this special Report upon "American Education in Fine and Industrial Art." Hence it follows that a chapter, or an appendix, relating to any separate feature of this Report, may, with propriety, appear in any one of the several "Parts," or volumes. This is especially the case with Parts III. and

IV. as when some ten years ago, the volume containing the accounts of these societies and schools, was expected to appear as "Part II." simultaneously with "Part I," the plan was to include all the matter relating to these institutions in a single volume. As one, or two, of the large institutions now herein described were not then in existence, one cause for the growth of this work, will be readily understood.

In the present volume, the Appendices begin with Appendix "R.," which comprises extracts from an address delivered in 1874, before the State Association of the teachers of the State of Pennsylvania, by Hon. George Woods, LL. D., in which the claims of elementary technical education to be included in the curriculum of the public schools are earnestly urged.

This public advocacy of the New Education, anticipating by two years the opening of the Centennial Exposition, becomes a part of the history of the movement which, begun in Massachusetts by the calling of Walter Smith from England in 1870, has extended over the Continent and is now recognized as an important element in the education of American youth. As one of the chief purposes in the preparation of this Report has been to collect and preserve the material requisite to a true history of the movement here recorded, and especially to a history in detail of the institutions described; the value of this address as a memento of the beginnings of the movement is evident.

In Appendix "S.," several papers by acknowledged educational authorities are grouped; all bearing upon the need and feasibility of a change in the then prevalent methods of education. As each Appendix has a special introduction, the separate papers need not be here particularized in detail.

The problems arising from the rapid development of Science applied to industries, as shown in the creation of new inventions, and methods; tending, in many cases, to render obsolete former methods and to displace trained craftsmen; the latter effect in its far reaching disturbance giving rise to one of the most difficult of the problems which confront modern civilization, were considered in an important article published by Dr. Wm. T. Harris, as long ago as 1878; from which some extracts are here given.

The need of some form of industrial training in public schools is set forth by Professor Runkle, of the Massachusetts Institute of Technology; while Professor Sylvanus Thompson, of England, shows clearly the change that has taken place in the character of apprenticeships, and the consequent necessity that arises, for definite technical training in the industries. Mr. Hinton, a young English artisan, follows with a plea for the higher education of mechanics; and shows, by an apposite anecdote, how potent a part museums and public art collections may play in affording opportunity for such higher art training in industries; with this realistic illustration of the utility of such public art collections, the brief accounts which follow, of several museums, aptly round out and complete this appendix.

Appendix "T," combines in the papers included, interesting accounts of elementary and higher technical schools in Europe prepared by Professor Runkle, with a paper by Director Kastner, of the Lowell School of Design, attached to the Massachusetts Institute of Technology,—long the only technical School of Design in the United States,—showing how *Directly Art may enter into manufactures.*

It is encouraging to know that within the past few years it has been possible to obtain direct instruction in the Arts of Design as applied to manufactures, elsewhere in this country; though similar opportunities for training Art workers in industries are still deplorably infrequent in the United States.

Appendix "U." contains interesting accounts of European Artisan and Industrial Art Schools. The first paper is a statement by the authorities of the Artisan's School in Holland; this is followed by a very full report made by Mr. Charles M. Carter, then of Boston, but now of Denver, Colorado, descriptive of a number of European Industrial Art Schools in which are embodied such practical details of the instruction given, as are likely to be of service to managers and teachers of similar schools in the United States.

Appendix "V." contains extracts from valuable reports made by English and American Commissioners to the Vienna Exposition, in 1874; and, also, from the Austrian Official Report of that exhibition; notable in the brilliant series of Worlds Fairs inaugurated in Hyde Park, in 1851.

The Centennial Exposition, in Philadelphia, in 1876, and the Columbian Exposition, in Chicago, in 1893, have demonstrated to Americans the far reaching beneficial and awakening influence of these wonderful exhibitions of the products of the Invention, the Art, and the Industry of the Human Race in this Nineteenth Century of the Worlds Progress.

Appendix "W." The delay in the issue of the present volume made an additional appendix necessary, if any record of the contemporary educational movements in the development of Industrial Art Education in this country, and in Europe, down to the end of the year 1896, was to be included. It is evident that the contents of such a supplementary appendix, to be at all satisfactory, must, of necessity, be miscellaneous. The papers given are classified in twelve divisions and fill 216 pages. Their subjects will be found briefly stated in the "General Introduction" to this volume, as well as in the "Introduction" to the Appendix itself. (See pages xli-xlii and 905-906.)

APPENDIX R.

TECHNICAL EDUCATION IN THE UNITED STATES.

INTRODUCTION.

The relation of Technical Education to the material development of the country and its claims to consideration, in any scheme of Public Education are well stated in the following extracts from an address delivered twenty years since, to the Teachers of the great industrial State of Pennsylvania by Dr. Woods.

The subject of Technical Education in all its phases, has with each ensuing year, assumed increased importance and been more generally recognized both in this country and in Great Britain. In which latter country the results of the attention given to this branch of Education by the continental nations and in the United States, have incited the Government and Educational authorities to investigation followed by immediate and energetic action similar in kind, to that so successfully inaugurated in Industrial Art Education thirty years ago.

In the United States as has been already shown, the need of elementary technical,—known as “Manual,” training for the older pupils of the public schools, as well as of providing some training in technical specialties for others besides those intending to become engineers and specialists of the higher grades, has been recognized; and various experimental efforts to meet the necessity have been inaugurated, while, from time to time, new institutions similar to those that have already proved successful have been established.

I.

TECHNICAL EDUCATION.*

[By George Woods, LL. D.]

I address the representatives of the nineteen thousand educators of our large, rich and influential State, to whom is intrusted the moulding of our twelve hundred thousand youth. Not our fertile soil or our many manufactures, in themselves considered, are of so much importance as the brain and brawn of the youth who are to cultivate this soil, and increase and perfect these manufactures, thus giving us the high rank we should attain among our sister States. However humble our work as teachers may be regarded by those who measure men by their annual income, or their display of dress and equipage; measured as every work should be, by the good done, it is second to none. I do not address legislators, sensitive as an aspen leaf to the popular breeze; or manufacturers, looking eagerly at the profits of the present year; but those who sow for others and the future; who toil not to mine coal, or make pig-metal, but to build up true intelligent men and women.

* Technical Education. Address delivered before The State Teachers' Association at Shippensburg, Pennsylvania, Aug. 12, 1874, by George Woods, LL. D. Pittsburgh: Bakewell & Marthens, 71 Grand Street, 1874, pp. 32.

I address you on a practical subject, and I desire to do it as earnestly and with such statistics and facts as will impress you, and, through you, others in different parts of our State, with the great importance of the subject, and secure such action as shall advance the good of our youth and the interests of our State. And I propose to do it in a plain, unadorned manner, stating some of the many facts before me which favor education in the theory and practice of the arts and trades of all kinds, "that special education in our calling which should fit and enable each of us to discharge in the best manner the special narrow round of duty by which each citizen fills his own personal place in social life." * * *

Our duty as educators is not simply to instruct in one or a few studies, but to decide on the comparative value of different studies to different students, with different capacities, tastes, and purposes. The object to be moulded, and the use to be made of it, should be understood. What may be most useful to one at one time, may not be so at another time, or to another at the same time. The fit thing to be studied, in the fit quantity, at the fit time, is to be decided—what will be best suited to furnish, stimulate, and strengthen the mind for the future work. The question is not whether a certain study is useful or not, but whether it is the *most* useful for a certain student at a certain time, in his circumstances, and with his intended business or profession, and this, too, without reference to the taste, profit, or convenience of the teacher. * * *

IMPORTANCE OF A WISE CORRELATION OF THE STUDIES TAUGHT IN ELEMENTARY SCHOOLS.

The very men who ridicule and condemn the study of the classics as a waste of time, will teach other branches to such persons and to such an extent or in such a manner as will prove an injury and loss to them. The youth who is to leave school at fourteen, is required to spend all or an unreasonable portion of his school life on unimportant parts of geography, grammar, and arithmetic, to the total neglect of drawing, elementary chemistry, physics, and other branches of knowledge, an acquaintance with which is essential to his success in life. The acknowledged waste of time on the classics by those who have no time or capacity for them, or who pursue them to the neglect of more important studies, is, however, sustained by comparatively few; the loss from entire neglect, or injudicious teaching of many of the primary branches, is sustained by the many. Less than four per cent. of our youth extend their studies beyond the common elementary branches. An error, therefore, in our educational methods, for these branches affect twenty-four times as many persons as in the case of the classics. So, while gazing at distant objects, we have stumbled into holes immediately before us. Such is human consistency!

The relative worth of different kinds of knowledge to the student has not been sufficiently regarded. The studies he has pursued may be valuable, and to the extent to which he has pursued them, whilst they may be less so than other studies that might have been substituted in whole or in part. An immense amount of information bearing on the industrial activities, which should be understood by all, has been passed over, while the less useful has been studied. There has been a tendency to regard the useful as ignoble.

The answer, then, to the question, What should our youth study? has not been intelligently given. The philosopher said they should study that which they will most need when they become men. William Penn, in writing to his wife in relation to the education of his children, said, "Give them learning, but let it be useful learning."

* * * * *

Care should be taken that we do not go to the opposite extreme, seeking only the immediately practical. Universities do not exist merely for the purpose of training men for their special crafts or trades. To ridicule any ulterior end is irrational. "The man is more than the trade." Practical, skillful men in the trades and arts we need. To have them we must educate them. They will not grow of themselves. God will not work a wonder to help us when he has given us wherewith to help ourselves. Especially are such men demanded in our State, where there are so many persons engaged in agricultural, mechanical, engineering and mining pursuits. To advocate such an education is to advocate the highest interests of our Commonwealth and its toilers.

The opinions of men as to the comparative value of studies, have varied greatly at different periods. Archimedes regarded it as degrading to science to be useful, to contribute to the wants and happiness of man. According to Seneca, to impute to man any share in the invention or improvement of a plow, a ship, or a mill, was an insult. It is in accordance with this spirit that practical studies, those which relate to the daily employments of life, are now stigmatized as "bread and butter sciences." * * *

AMERICA FAR BEHIND EUROPE IN OPPORTUNITIES FOR TECHNICAL TRAINING.

Yet in technical education we are far behind England and the continent, where are numerous richly endowed institutions fitted to give instruction in practical education. They have consequently acquired great superiority over us in many of the arts and manufactures. We have been too well satisfied with ourselves and our school system, and have not educated our youth in the arts so as to develop without "trial and error," and without the most lavish waste, our abundant natural resources. Our wealth has reached the sum of \$30,000,000,000. But we forget that we are in most cases exhausting our virgin soil without seeking to restore it; that we are consuming our vast stores of mineral wealth and recklessly destroying our forests. * * *

We forget that it is labor which creates wealth or enhances values, and, so far as labor was employed in developing our resources, to that amount, and to that amount only, it has added to our wealth. Of this vast natural wealth we must not be too prodigal. * * *

WEALTH PRODUCING POWER OF SKILLED LABOR.

We have no faith in the opinion, early expressed in our country, that we should confine ourselves to agriculture and avoid manufactures. This would make us the slaves of foreign countries, simply tributary to their wealth. An agricultural people can never become wealthy or powerful. What we do want is intelligent, skilled labor to enhance the value of the natural wealth of the country, and send it to the market increased in value one hundred or a thousand fold. How greatly labor increases the value of the material can be easily illustrated. Aniline colors, surpassing in beauty the Tyrian purple, are made from coal tar, until lately a worthless refuse; and the aniline blue sells for \$28 a pound. A pound of cotton, costing 12 cents, made into muslin of good design, sells for 80 cents, and into chintz, \$4; a pound of the finest cotton, costing 40 cents, made into cotton lace, will bring \$1,000. Iron ore, costing 75 cents, made into bar iron, will sell for \$5; horse shoes, \$10.50; table knives, \$180; the finest needles, \$6,800; shirt buttons, \$29,480; watch springs, \$200,000; hair springs, \$400,000; pallet arbors, \$2,577,595. Here labor has, with the aid of machinery, produced the difference between 75 cents and \$2,577,595. Any article obtained without labor has no exchangeable value. Rude labor, that which requires no practice or education, brings the lowest price; dexterous labor, which enables a person through practice to perform works or parts of works quickly and nicely, brings a higher price; and skilled labor, combining a knowledge of the principles underlying the operation, as well as dexterity in their execution, brings the highest price. Skilled labor creates values, rude labor often destroys them. The last stroke of the skilled sculptor gives value to the statue; one blow of the rude laborer might destroy the work of years. It is by labor that our machine-shops and iron-furnaces have been productive of more wealth to our State than would be the richest gold mines of the world. And if one-half of the 616,000 persons in our State engaged in agriculture, manufactures, and mechanical and mining industries, should become *skilled* laborers, there would be an annual addition to our wealth of \$184,800,000. If there should be the same change in one-half of the 9,000,000 engaged in the same pursuits in our whole country, it would, at a very low estimate, add \$2,700,000,000 annually to the wealth of the nation. We must not overlook the fact that the sum required for necessary food and clothing, is the same for all classes of laborers. In England it has been computed that \$125 represents the cost of a highly skilled over a skillless workman; and that this cost of a skilled workman is less than one year's purchase of his increased value to the nation.

VARIED BENEFITS ON TECHNICAL EDUCATION.

* * * * *

Such practical and theoretical education as I am advocating, will save many of the losses arising from ignorance, or a want of habits of thought. Property and life will be preserved, the nation will be enriched, and the fierceness of the struggle between labor and capital will be diminished. What benefits the State benefits her citizens. Better educated and more skilled workmen command higher compensation, and higher compensation will enable men to procure more comforts and luxuries, and to take higher positions among their fellows. A person educated in the common branches alone will usually earn twice the sum that an uneducated one will, and then his prospects are good for advancement to the position of overseer or manager, with, it may be a salary of thousands, while the ignorant man has no such chance. A few years since, a director of one of the extensive cotton manu-

facturing corporations at Lowell, Mass., stated that only forty-five out of twelve hundred operatives in their mills were unable to write their names, and that the wages of these were twenty-seven per cent. less than the wages of those who could write. In the same mill were one hundred and fifty girls who had been teachers. Their wages were seventeen and three-fourths per cent. above the general average, and forty per cent. above those who made their mark.

* * * * *

These industries should be multiplied, and technical education will tend to this result, by giving us the skilled workmen needed for this work. The almost entire disappearance of the apprenticeship system, and the oppressive rules of trades-unions, make this education an imperative necessity. Our manufacturers would gladly listen to the entreaties of fathers and mothers to take their sons as apprentices, but they cannot.

THE NATION THAT NEGLECTS TECHNICAL TRAINING OF YOUTH MUST BE CONTENT TO FALL BEHIND.

The State must remedy this evil, or suffer our youth to become common laborers under foreign overseers. England until 1868 neglected this education, and so fell behind the Continent, losing her position in the manufacture of many articles. The shawl trade of Leeds was absorbed by continental manufacturers by reason of their technical knowledge; the silk trade was injured by a superior skill in dye and finish on the Continent; the designers, dyers and engravers in foreign countries, by possessing a thorough theoretical and practical knowledge of their several trades, produced greater purity and beauty of design, cleaner and brighter colors in the cloths and other fabrics they manufactured, finer patterns and greater lightness; Coventry ribbons were taken from her; foreign workmen were employed as painters and designers, and great deficiencies existed in those branches of knowledge which bear most intimately on the great departments of industry. Alarmed at these discoveries—that she was losing her supremacy in manufactures, that French companies were building locomotives for an English railway, and that iron girders for a building in Glasgow were being constructed in Belgium, she at once established technical schools of a higher order in the large cities, with others of a lower grade in the smaller towns. For a single department of the art school in South Kensington, £1,000,000 were expended, and £80,000 annually were given for its support by the state. In Queen's Institute, Belfast, Ireland, from three hundred to four hundred female students are trained in all branches of skilled labor, for which taste and physical fitness make them suitable.

GREAT NUMBER OF TECHNICAL SCHOOLS IN EUROPE.

In Europe these schools are many, and are supported wholly or in part by the State, on a scale, too, worthy the object. In 1869 there were three hundred and fifty technical schools in Paris. Eleven thousand men receive a technical education annually in Prussia. From ten thousand to twelve thousand workmen attend the lectures of the University in Berlin. Crewzot is a wonder of activity, skill and success, from her systematic technical education. From the same cause, Switzerland, cut off from the sea and from mines, with her mountain climate, at every disadvantage, competes with the world in many of her manufactures. In our own country, Cooper Institute, Stevens Institute, the Worcester Free Institute, and the Institute of Technology in Boston, and many colleges and universities, are doing valuable service in this department.

CHANGES DEMANDED IN AMERICAN SCHOOLS.

That there should be some change in our course of education, conforming to the increased extent of the sciences and their numerous applications, must be evident. What shall the change be? What reforms shall be introduced in our present studies, and what new studies shall be adopted? Time will permit me to make only a few suggestions in reply to these important questions.

The primary school should give a knowledge of objects, their forms and colors and uses. In doing this, drawing will be found highly useful, and it will prove an agreeable change from studies less interesting. It is, too, the foundation of technical education, and is important to all of every trade and profession. By training the eye to keenness, and the hand to accuracy and rapidity, it will prove a valuable aid to penmanship, orthography and reading, in all of which close observation is necessary. In its higher forms, geometric, model, mechanical and architectural,

it should be continued through the higher schools and colleges. It is not mere picture-drawing of which I speak, but something higher and more useful. As a result of this study, we shall have better artists, engineers, mechanics, architects, and designers. Many articles, such as glass, pottery, cabinet furniture, prints, and other manufactures, may be rendered worthless, or have their values increased many fold, according to their designs. Good designs increase the value of prints from twenty to thirty per cent. So important is this art of designing considered now, that a firm in New York pays a designer in shoes \$5,000 a year. By the beauty of his designs a manufacturer of silverware in Taunton, Mass., drove every other manufacturer out of the market. A single manufacturing company in Massachusetts stated that their designs cost them \$40,000 annually, every dollar of which went to England, France and Germany. This sum should be saved to our own country.

VALUE OF A KNOWLEDGE OF DRAWING TO WORKMEN.

Workmen do not sufficiently understand the importance of drawing. It is said that if this art were understood by every journeyman in a machine shop, the productive efficiency would be increased thirty-three per cent. By enabling workmen to work from a design instead of expensive models, this art would save a vast amount of time and money. A manager of an important branch of industry at Worcester, Massachusetts, says that, when a lad, he was one of a class of thirteen, who spent all their leisure time in studying drawing. At the present time, everyone then in the class has attained an important position either as manufacturer or manager, and each has owed his power to seize the opportunity of advancement, to his knowledge of drawing.

EXCELLENT EXAMPLE SET BY MASSACHUSETTS.

Massachusetts, ever alive to her educational and manufacturing interests, finding that she was far behind Europe in the education of her laborers, and that, as a consequence, her industries were suffering, adopted drawing as one of the studies to be taught in all the public schools of the State, making it obligatory on every city containing over ten thousand inhabitants to furnish free instruction in this art to all over fifteen years of age. An art director was procured from Europe at a salary of \$5,000, and generous provisions were, in all respects, made. The result is most gratifying. In 1870, her product in printed cottons was over \$17,000,000, and her other manufactures in which design is of the first importance, were probably more. Massachusetts never made a better investment for her sons and daughters, and her manufacturing interests.

PROPOSED SCIENTIFIC AND INDUSTRIAL TRAINING IN PUBLIC SCHOOLS.

It is believed that this study can be introduced into our schools without interfering at all with the present lines of study. Familiar lectures, with illustrations, on geometry, elementary physics, elementary chemistry and natural history, should be given to all who are to leave school early. The amount of scientific information thus received, though it may be small, will lead the pupils to notice facts and to study principles in science throughout life. As the pupils advance, as far as practicable, models or drawings of machinery, or the machinery itself, and all processes of manufacture, should be examined, and reports made with drawings explaining them, showing their excellencies or defects, and suggesting remedies. Special schools, or departments in existing schools, should be established where these branches may be thoroughly taught. As soon as it can be done, shops should be erected, where certain trades or parts of trades can be learned, where the hand and eye can be trained, and the student prepared for work or the management of works. Those who take a higher course in our schools and universities, should receive thorough instruction in all the sciences which relate to engineering, agriculture, the arts, trades and manufactures. It is my opinion, confirmed by many educators of experience and good judgment, that much of the time—years, it may be—now devoted to a few primary studies, reviewed so often that the process becomes mechanical and positively injurious, may be saved by commencing each study at the proper age, and omitting unnecessary portions of the text-books. Occasionally, for a term, the study of arithmetic, geography or grammar, may be wholly omitted for some new and more interesting study relating to science or the arts. The experiments and illustrations will awaken mind, kindle enthusiasm, and many will be induced to prolong their attendance at school, who otherwise would not. By this course far more will be accomplished in a given time than now. It has been found that

students who have spent but two hours per day in study, and the remaining hours in labor in which they felt an interest, have often made as much proficiency in their studies as those who have devoted their whole time to study.

Those whose course of study is to be limited to fourteen or sixteen years of age—and these compose by far the largest part of our students—should have a short, practical course, in accordance with such limited time. All, of whatever capacity or purpose, should *not* be compelled to pursue the same routine in the same time. This is the very objection brought so justly against the old collegiate system. Yet while that system in many colleges has been so much changed as to embrace numerous distinct courses suited to the different students, and in addition, in one case at least, to offer more than forty optional studies, there has not been a corresponding change in most of our grammar and ward schools.

DEFECTS OF PUBLIC SCHOOL COURSES.

Our best authorities agree that our public school system, so well adapted to a former state of society, fails to meet the wants of our people in the present state of civilization. And while there is a demand to extend our course of education upwards so as to embrace all the sciences, let us seek to extend it downwards to the practical, the Kindergarten, in all our primary and grammar schools. What is demanded of the college, let the public school practice. A loss of two or three years to a student in our public schools, who has but a few years of study, is far more to him than the same number of years to the collegiate student, whose course may extend to his twenty-second or twenty-fifth year. Let not the student, fitted by capacity and taste to excel in some one branch of knowledge or art, be compelled to spend all his school years on studies, valuable, it is true, yet having no special bearing on his future pursuit, on which all his interests centre. A failure to arouse the mind of the student, and to communicate to him that knowledge which he may most need in life, may be fatal to his whole future.

If a reform is needed, our educators should endeavor to effect it at once, so that there may be as little loss as possible. Let us not be "the last by whom the new is tried." A great work lies before us. Public opinion is to be formed, legislators are to be instructed, and large expenditures to be made by the State or individuals. In a cause which will yield such large returns the State can afford to expend liberally.

Some special schools have already been established on a comparatively limited scale, and many of our colleges, where the change commenced in this country, have their scientific departments. The effects of these practical and theoretical technical schools, wherever established, have been most marked—stimulating the intellect to activity, and diminishing the poverty, vice and crime of the community. And when we consider that eighty-two per cent. of the criminals of our country never learned any trade, never were masters of any skilled labor, and only six per cent. are skilled artisans and mechanics, the ethical value of this education becomes exceedingly important. The professions are crowded, and manufacturing and mechanical and agricultural pursuits are less honored than they should be. Our fathers and mothers should feel that a practical technical education is what most of their sons and daughters need. Our youth should be taught that there is true dignity in skilled manual labor, and that it will bring liberal pecuniary returns.

VALUE TO WOMEN OF TECHNICAL TRAINING.

To woman, rapidly rising to her true position, to whom the avenues of trade, the professions, and all kinds of employment are opening, this subject appeals with peculiar force. She should have a deep interest in any measure which will render her less dependent on husband, brother or father, and which will enable her to obtain a generous support when other resources fail. She should seek to be in a condition to feel independent, and to be able with ease to earn a livelihood. A knowledge of some art will tend to give her a higher position and to secure for her higher respect. From her knowledge of colors and their relations, and her skill in drawing, woman is fitted to succeed in whatever requires taste. The success of the lady pupils at South Kensington is greater than that of the male students, and that in the face of greater difficulties. The many branches of art—workmanship requiring delicate fingers and native readiness of taste, can be better performed by woman than by man. * * *

Woman can excel in draughting, architectural drawing, photography, engraving, modeling, designing and painting. Education in the arts, by opening to her new departments of labor, will enable her better to compete with man, secure for her better compensation for her services, and will increase her usefulness and influence.

IMPORTANCE OF ETHICAL TRAINING.

For the proper education of all our youth, with the least loss—the education that will best fit them for the duties of life, I plead. I do not, while speaking in behalf of practical learning, forget the moral and the religious training, without which man will be a failure here and hereafter. The heart is more than the hand or eye—the future more than the present. Ability, power, may be used for evil instead of good; to curse instead of to bless. To others I must intrust this subject. I plead for useful learning in the school-room or the shop, or both, as a means of interesting our youth, giving them a taste for manual pursuits, so restraining them from idleness and crime; of enabling them to provide better for their own comfort and happiness, so increasing their self-respect and adding to the wealth and moral power of the State.

The effects of technical education in Europe lead us to believe that this system, commenced in the primary school, and continued through the different grades, would bring many of the five million youth in our country of school age, who attend no school, under instruction and make them industrious, moral, happy and skilled laborers, instead of paupers and criminals.

When plans for education in all its departments, for all, shall be wisely devised and faithfully executed, we shall have better and more productive workmen, better citizens, thinking men and women, multiplied power of machinery economically used, the yield of our soil doubled, a more virtuous people, and our republic more prosperous and more safe.

APPENDIX S.

PAPERS RELATING TO THE PRESENT NEED FOR ELEMENTARY EDUCATIONAL TRAINING IN THE INDUSTRIAL ARTS.

- I. Introduction.
- II. The Readjustment of Vocations, by William T. Harris, LL. D.
- III. The Manual Element in Education, by John D. Runkle, LL. D.
- IV. The Apprenticeship of the Future, by Prof. Sylvanus P. Thompson,
of England.
- V. The Higher Education of Mechanics for their Trades, by Louis J.
Hinton.
- VI. Technical Museums.
- VII. Additions from India to Collections of South Kensington Museum.
- VIII. Local Industrial Art Museums in Great Britain.
- IX. England's Debt to Sir Henry Cole.

APPENDIX S.

ELEMENTARY EDUCATIONAL TRAINING IN THE INDUSTRIAL ARTS.

I.

INTRODUCTION.

The following papers relate more or less directly to the industrial applications of the new training which, beginning in the Kindergarten and continued in the elementary drawing courses of the public schools, may tend to the development of skilled mechanics in the industrial arts on the one hand, or to the artistic industries on the other.

The opening paper, by Dr. Harris, treats in a broad and philosophic manner, the relations of both these phases to the new conditions of society; in the second paper, Professor Runkle, urges the value of manual training in the public schools and suggests plans for its practical application in connection with our present schools. Professor Thompson, considers the same subject from an English stand point, and illustrates his article with accounts of typical European schools,—these three articles are valuable contributions to the discussion. The next article is a very interesting paper written by a practical young English mechanic, an artistic artisan,—a skillful carver in stone,—upon the value and importance of technical training for Mechanics.—Mr. Hinton, who was for some years in the United States, and who has left examples of his handiwork on the buildings of Cornell University, draws very interesting comparisons between English and American workers; of necessity the questions are approached by him from a very different stand point to that occupied by the theoretical educator, and his statements possess added value from the fact that they give the observations and express the judgment of a practical workman, whose own education and experience render him peculiarly fitted to form and express intelligent opinions concerning these topics. An interesting incident is related by him of an English workingman, which strikingly shows how Art Museums may directly influence and help men whose employments seem far removed from the possibility of any such result. The sound criticism on that lack of artistic appreciation in New York which could permit the authorities of Central Park to suffer artistic and costly stone carvings to be concealed by allowing climbing vines to be carefully trained over the bridge balustrades which, with patient art, had been carved into beautiful forms, is calculated to make an American blush for the stupidity there chronicled.

This letter, though written some years ago, is still suggestive and interesting. The writer was subsequently sent, on the part of the United States, as one of the artisan commissioners to the Vienna Exposition, of which he made a valuable report; he has since returned to England, though at the time of writing this paper he fully designed to become an American citizen.

Three or four short papers upon Technical and Industrial Museums follow.

II.

THE VALUE OF INDUSTRIAL EDUCATION AND ARTISTIC EDUCATION IN THEIR APPLICATION TO THE READJUSTMENT OF VOCATIONS.

The problems, arising from overcrowding in old countries and overproduction in manufactures,—due in part to the substitution of machinery for human muscles,—everywhere confront the political economist, the student of social science and the educator. How best, in this rapidly developing civilization, to meet the new conditions, is the task set before all. So long as limitless leagues of virgin soil await the cultivator, so long the ultimate solution of these problems may be deferred; but, already, in the United States, the result of the long continued inflow of immigration from other lands compels a recognition of the fact that there is a limit to the available, unsettled lands which remain; while, in the older cities and states, the pressure of population has developed like conditions to those in the old world.

That the need, which was considered in the early chapters of this Report,—of so modifying the methods of education as to better fit the future citizen for adaptation to the new conditions of life, begins to arrest general attention, is shown in many ways. This need the educators have not been slow to perceive, as the many experiments in the introduction in public schools of elementary industrial drawing already undertaken, and the movements in various communities looking to the introduction, in some form, of elementary and technical mechanical training, in connection with the public schools and higher institutions of learning, abundantly prove. One of the profoundest thinkers among American educators, Professor William T. Harris, formerly Superintendent of the Public Schools of St. Louis, Mo., so long ago as 1878, treated of this subject in an article entitled "The Readjustment of Vocations," which appeared in *The North American Review*, September and October, 1878. Professor Harris treats the subject generally, taking up the subdivision of labor necessitated by modern civilization and then showing how the situation had been affected by the events and conditions in the United States; noting especially the wonderful productivity of the inventive genius of the country during the war, in meeting the needs caused both by the withdrawal from industrial avocations of so many laborers, and by the excessive waste of war. The concluding paragraphs, showing how education fits for such conditions and what kind of education the present situation demands, are here given.

"THE READJUSTMENT OF VOCATIONS," BY PROFESSOR WILLIAM T. HARRIS, LL. D.

* * * Migration is the great available means of present readjustment of vocations. It says to the citizen who falls out of his place in the line of productive industry: "Go to the foot of the line and begin again. Engage in the exciting task of building up civilization in an empty wilderness, and you and your children shall thrive once more." The tonic effect of a residence on the border-land is so potent that it deserves to be applied as a remedy in numerous social distempers. In fact, a regular circulation should be kept up between the centre and circumference. A border-land is a perennial incident to civilization; no matter how large the circle of civilization, the pioneer-process is always to be found on its circumference.

But migration does not solve the question definitely; indeed migration itself presupposes some versatility obtained by general theoretical culture of the schools. It is obvious that the best chances will be for that immigrant who comes with a knowl-

edge of school-learning. Education is manifestly the most potent means of preparing in advance for the ready readjustment of the laborer in a new vocation. Any general preparation of the laborer for his calling will give him versatility, and contribute to his ability to adapt himself to whatever change may transpire in his fortunes. The general education begun in our common schools, and continued in our academies, high-schools, and colleges, is undoubtedly capable of the widest practical application, and best fits one for readjusting his vocation in life. The more special the education the less it fits the individual for this change. But we must not conclude from this that branches less general in their nature than those ordinarily taught in our schools should not be introduced into the curriculum—quite the contrary. While claiming that the studies of our common schools are the most practical of elementary studies, it is possible to introduce disciplines which point to mechanical vocations, without in the least injuring the old course of study.

IMPORTANCE OF INDUSTRIAL TRAINING IN PUBLIC SCHOOLS.

Industrial education—specially so called—has or should have its place in our common schools and high-schools as an additional safeguard against disaster in the process of readjustment, which must go on uninterrupted among the American laboring-population. It should partly precede and partly follow, as well as accompany, the general course of study in the common school.

1. There is first a most carefully-devised scheme, laying a foundation for industrial skill in general, before the pupil is mature enough to take up the studies of the general curriculum of the common school. Froebel's Kindergarten takes the child at four years of age—while his muscles are yet unformed—and disciplines them in such a way that they will have for all after-life the special development which gives skill in manipulation. While it does not neglect the child's imagination nor his manners, it lays a good foundation for skill in the use of the hand and eye, and in the first theoretical steps in form and number.

2. Drawing is the chief industrial study in the common school proper; and, if taught thoroughly in all its departments, it will nearly suffice for the general training of the hand and eye, such as is indispensable in most of the arts and trades.

3. Finally, the institution called "school-shops" creates versatility within the range of mechanical industries. It is in this "school-shop" that the pupil learns the theory and practice of tools in general; and a boy well trained in a "school-shop" would learn the mysteries of a special trade in a month, and would go forth into the world of industry able to readjust himself if any untoward accident happened to his special vocation.

VALUE OF ART APPLIED TO INDUSTRIES.

Although art education is allied to industrial education, the two are not identical; art education is the training which fits one for the appreciation and production of the beautiful—as ornament or as free art. It is obvious that a large portion of the labor set free by the increased productivity of new mechanical inventions should not be forced to migrate, but should remain and devote itself to the ornamentation of the manufactured products. Further elaboration, higher degree of finish, should add greatly to the market value without increasing the bulk. This is the process described as the enhancing of values by mixing brains with the manufactured products. To add beauty to mere use increases the market value. The money paid for ornament is astonishingly out of proportion to that paid for mere use. The retention at home here in the United States of the money sent abroad to France, England, or Italy, for various forms of ornament would go far to enrich those superfluous workmen who fall out of their vocations by reason of inability to adapt themselves to changes.

With a perfect system of readjustment of vocations, it is obvious that the progress of mechanic inventions brings with it emancipation from physical labor, and the opportunity for each and all to ascend in the direction of those vocations having for their end the direct ministrations to the spiritual wants of man. The artisan will give place for the artist in each department of industry. The vocations devoted to obtaining natural productions, to their elaboration (manufacturing), to their exchange and distribution, and to the public protection, are destined to employ mankind in a gradually decreasing ratio; while those vocations which are devoted to human nurture and education, to the Church, to the reflection of human life through artistic and literary productions, and to pure science, will be followed by an increasing number of people."

WILLIAM T. HARRIS.

III.

SOME FORM OF INDUSTRIAL TRAINING A NECESSITY FOR PUBLIC SCHOOLS IN THE UNITED STATES.*

[By Prof. John D. Runkle, LL. D.]

The decay of the system of apprenticeship has raised the question how skilled labor is to be provided in the future. This question is now agitating all countries having any industries to foster or extend. In our own country the more extended and varied use of machinery has caused the more rapid decay of the system, and if we except, perhaps, England, no country stands to-day in such urgent need of a remedy or substitute. In the early days in our own country, when our system of public education was still in its infancy, mental and manual education were much more intimately connected than at the present day. The industries of the country were still in a crude state; agriculture and a few only of the more necessary mechanic trades having any existence. These trades demanded but little artistic taste, and not the highest manual skill. The master became responsible, in an important sense, for the mental and moral well-being of the apprentice, besides teaching him the manual of his trade, with such knowledge of the theory and such experience as he was able to impart. By his attendance, for three or four months of each year during his apprenticeship, upon the district school, the mental culture of the apprentice was not entirely discontinued; and thus, by alternating between the school and the shop, his mental and manual education were never entirely divorced, but each in an important sense aided the other.

CHANGED CONDITIONS MUST BE MET BY NEW METHODS.

As time passed, a more marked separation between mental and manual education began to take place. The schools gradually improved. Better methods of teaching and a larger number of subjects were introduced, and a higher set, all demanding more time from the pupil. But quite as marked a change was going on in the industries. Increased demand led to competition, to the invention of special tools to cheapen production, to a greater subdivision of labor, and to the concentration of the individual upon a very narrow range of work. Thus the apprenticeship system for learning a trade in its old and best form has passed away, never to return. As it exists to-day it is an advantage to neither party. The apprentice can only learn a narrow specialty, so narrow, as a rule, that its only value to him is the meagre pittance which he can earn from day to day, but at the sacrifice of any further educational advantages; while the master finds it for his interest to pay for the skill he needs, rather than put into his carefully adjusted chain of operations a weak and nearly useless link. In this way the school and the shop have become so widely separated, that they are no longer mutual helps, as in past times, in developing the highest capacity or the highest manhood. The student who enters the shop at fifteen for a three or four years' apprenticeship seldom returns to the school; and, on the other hand, the student who completes his high-school course at eighteen seldom willingly enters the shop as an apprentice, with the intention of becoming a skilled mechanic, and earning a livelihood by manual labor. His twelve or fourteen years of mental schoolwork, whether highly successful or not, have, through habit, if in no other way, unfitted him for all manual work, even if he has not in many ways been taught to despise such labor. * * *

On the Continent the same changes, though less rapidly, are taking place. There is less concentration, and the various trades are still largely in the hands of individuals and families, and handed down to sons or others to whom they have been taught through the old system of apprenticeship. In Germany the young mechanic, in many instances, still finishes his education by two or three years of *journeymanship*, which enables him to gain further knowledge and experience in his trade, and see something of the world before settling down to his life's work. But the change is gradually taking place in all countries, and all are preparing to meet it through some form of education. England, as is well known, has, during the past twenty-

* From a paper on "The Manual Element in Education" by John D. Runkle, LL. D., printed in the 45th Annual Report of the Mass. Board of Education, 1880-81. See pages 195-200.

five years, by the introduction of a general system of elementary education, including drawing, and through special technical schools and museums, revolutionized many of her industries, particularly those involving artistic taste in design as well as excellence in manufacture.

But in practical education in the mechanic arts, so far as I am aware, nothing has been done in England. In this direction France has long taken the lead, and has in the last few years awakened anew to the importance of the subject. The introduction of the mechanic art method of teaching, and the influence which this method is having in modifying the details of instruction in the various trade-schools, constitutes a new era in technical education in France.

APPRENTICESHIP STILL EXISTS IN GERMANY.

It is well understood that Germany still produces skilled mechanics, especially wood and metal workers, many of whom find their way to England and this country. But this is not due to the introduction of any system of manual education in this direction. When the older polytechnic schools, such as those at Karlsruhe and Stuttgart, were established, shop instruction constituted a part of their educational scheme; but it soon fell into disuse for want of some plan by which alone success could have been made possible; and the result is that the influence of all the German polytechnic schools is opposed to such education by any method. Even the trade-schools at Augsburg, which ranked for many years with that at Chalons-sur-Marne in France, both in its methods and aims, has for some reason been discontinued. But apprenticeship still prevails, in connection with a thorough public education in schools more or less adapted to the needs of classes of students. Drawing and the elements of the sciences are taught to a large extent in view of their uses in industrial pursuits; various special schools exist for the education of artisans, such as the excellent *Gewerbe-Schule* of Stuttgart; but the manual skill must be gained in the practice of the trade, and not in the school.

ELEMENTARY TECHNICAL TRAINING ADOPTED IN AUSTRIA

Austria is quite as rapidly, if not more so than any other country, substituting systematic mechanic art instruction in place of the old apprenticeship system; and, if she shall adhere to her present course, it is not difficult to foresee that in a few years she will rank among the leading industrial countries of Europe.

In the foregoing I have included such schools as seemed to teach a special lesson in regard to the introduction of the manual element as part of a system of education. In addition to the remarks already made in connection with each, I wish simply to say in conclusion, that with but few pupils, so few that each can receive special instruction, a lack of system, or any system, may not be entirely fatal to some degree of success, any more than it would be to teach general, qualitative, and quantitative chemistry in the same laboratory; but no one would expect to get the best results. For large classes, on the other hand, special shops arranged for class-teaching become imperative. In the next place it is pretty generally admitted that, if only a general mechanic art training is desired, then shops arranged with this end in view are better than any manufacturing shops can be, whether considered on educational or economic grounds. Again, even in schools where manufacturing shops are part of the apparatus of instruction, it is becoming more apparent that a certain amount of preliminary or mechanic art training is necessary in order that the double aim of the shops, instruction and manufacturing, may both meet with reasonable success. While there may be special reasons, such as the expectations of the public, or the belief that no valuable teaching can be done except through manufacturing, why this department of instruction should demand greater opportunities for application in the school than other subjects or departments of engineering, I am persuaded that the manufacturing element will gradually diminish even in schools where it already exists, both on the grounds of economy, and because a mechanic art training will in general be found to better prepare the student to choose wisely, besides opening to him a broader career for the future.

WHY OUR PUBLIC SCHOOL TRAINING NEEDS THIS ADDITION OF MANUAL AND INDUSTRIAL ART TRAINING.

We sometimes see a formal argument made to prove the obvious proposition that an educated man makes a better mechanic than an uneducated one; and it is hence inferred that our public-school system, in many ways so admirable, and the result of so many years of labor and experience, is all that can be desired, and that any suggestion of a modification which may the better adapt it to the future needs of the large proportion whose education is finished even in the grammar schools, is

in the nature of an attack upon the system. But this is by no means the case. The quality of the education may be of the very best; and yet the question may be asked, whether an education based mainly upon scholastic studies, with so much drawing and science as time will allow, is the best course for the largest number of pupils. It is sometimes thought that the reason why so many graduates of high schools seek positions as clerks, book-keepers, and other light forms of labor, is because these positions are thought more genteel than pursuits involving manual labor. This may be true to some extent; but I apprehend that quite as frequently the graduate asks himself, What can I do? what has my education fitted me to do? There is but one answer, and he acts accordingly as he ought; for, even if he wished to follow some trade or industrial pursuit needing special technical knowledge, he may not be able to devote the time and money necessary even if the conditions of apprenticeship were favorable. Suppose now that the same student had the opportunity during his school course, say till eighteen years of age, to go through a well-arranged series of mechanic art shops under competent instructors: what are the chances that upon graduation he would not enter upon that pursuit for which he felt himself best fitted, and which held out the best prospects, not only for the pressing present, but for the future? That a course of education forms habits as well as tastes, is obvious; and it is unreasonable to expect that pupils educated almost exclusively through one set of closely allied subjects should show a partiality for pursuits with which these subjects have only the most remote, if any, connection.

THESE NEEDS NOT PECULIAR TO THE SCHOOLS OF THE UNITED STATES.

American boys and girls are not peculiar in this respect. The same tendency is noted and complained of abroad, when, in fact, it ought to be expected. What, then, is to be done? Will any thing short of educating the hands and head together answer? It might if manufacturing establishments would take young men after they leave school, and educate them in the quickest and best way. But this we are not to expect so long as it is hardly more for their interest to take them into their shop and teach them handicraft, than into the drawing-room to teach them drawing. In short, the time has come when if a young man wishes to follow a certain course he must so far qualify himself as to be of use to his employer, and thus to himself; and, as the State cannot afford not to educate its children, it cannot afford not to so educate them as to make them the most serviceable to the State as producers and citizens.

But how can this be done at the least expense, and with the least change in our present public-school system? Obviously by utilizing our present educational facilities to the fullest extent, and not by pulling down in the hopes of building something better upon the ruins. It is also obvious that cities need this change more than the country, where almost every child is daily accustomed to some kind of manual labor on the farm or in the shop.

In the city two courses are open,—either to build up an independent mechanic art school, or to attach a series of shops or laboratories to the high school. If the intention is to specialize this education, then an independent mechanic art school would best accomplish the purpose, and at the same time most probably more or less injure the high school by drawing away some of its pupils. If, on the other hand, it is thought that a proper manual element should enter into the education of all, then the shops would be attached to the high school, and serve to strengthen it by attracting students who now do not see any gain in the high-school course unless they have the college or some other particular end in view. Admitting that two three-hours lessons per week for the four years would be as much time as would be needed for shop instruction, then a series of eight shops arranged to teach twenty-five in a section would accommodate twelve hundred pupils. It is plain that only the laboratory method would make it possible to teach this large number of pupils, and one such series of shops would be ample for a good-sized city."

JOHN D. RUNKLE.

INSTITUTE OF TECHNOLOGY,
Boston, Feb. 13, 1882.

IV.

THE APPRENTICESHIP OF THE FUTURE.

The following article by Professor Sylvanus P. Thompson, which appeared in the September, 1880, number of *The Contemporary Review*, states clearly the change that has taken place in the *character* of apprenticeship even where, as in some occupations in Great Britain, the form of apprenticeship is still retained, and emphasizes strongly the need of providing, in some other way, for the training of artisans. To these general statements of conditions and needs, there is appended, a brief summary of the efforts which have been made by the Swiss, Belgian, German, Russian and the French Governments, and manufacturers, to meet this pressing need for the technical training of artisans; followed by a careful description of four typical institutions in France for the training of artisans, which the writer instances as admirably illustrative of the several distinctive methods by which the solution of the problem has been attempted, and in each of which he finds some admirable features peculiar to the institution which, as he suggests, may be so modified as to be adopted "*mutatis mutandis*", to the different circumstances of English communities.

If the conditions in Great Britain with its advanced art industries, are such as to make these examples of importance there, how much more important is their consideration to the educators and manufacturers of the United States, where as yet, there has been, comparatively no general development of Art Industries, and certainly the most inadequate attempts at any general industrial training of artisans. In this connection the subsequent words of the author upon the importance of some,—however slight,—training in manual labor, at a *much earlier age* than that at which boys are supposed to leave the public schools, are worthy of careful attention.

These four industrial training schools which are given as models, are in their character, similar, the first, to such a training school as might be attached to one of our public schools for boys from 8 to 14 years of age; the second, to an almost purely industrial school, with a modicum of common school teaching thrown in; the third, to a school undertaken by manufacturers themselves, for the purpose of training up a superior class of artisans for their own employment, like that under the direction of the Hoe's, in New York; his final illustration is a municipal school under the direction of the municipal authorities, as are the public schools in the United States; only this is a purely technical school, for boys of 14 to 16 years, whose primary common school education has been completed, and who attend here for three years, for the definite purpose of becoming good workmen; the institutions in the United States with courses most like this last named school, are the mechanical schools of the Mass. Institute of Technology, and the Worcester County Free Institute of Industrial Science.

The arguments urged in this article apply with equal force to American statesmen and educators as to those of England to whom they are directly addressed; while the several typical schools are so well described and so clearly differenced from each other, so individualized, as to make this a valuable contribution to the knowledge requisite for an intelligent consideration of this question of industrial art training; which, *justified by McPherson*, is pressing for solution.

As confirmatory of the new needs for definite industrial training of artisans, which have been so persistently and variously indicated throughout the pages of this Report, and as full of information directly bearing upon the topics herein discussed, this article is inserted.

THE APPRENTICESHIP OF THE FUTURE.

There cannot be two opinions as to the prejudicial influence exerted upon the industrial interests of Great Britain by the unsatisfactory state into which the question of apprenticeship has been gradually drifting, and out of which it has not yet begun to arise anew. Out of harmony with the necessities and conditions of the times, a relic of days long past, ere the steam-engine, or perhaps even the printing-press, had rendered great manufacturing industries possible, the system of apprenticeship, which has been handed down to us from our forefathers, is so strangely at variance with the most obvious principles of sound educational science, to say nothing of sound economic theory, that there is little wonder that it has fallen into discredit, and that the legal provisions under which it grew and flourished have been suffered to lapse into a dead letter.

APPRENTICESHIP IN THE PAST.

Time was when, for the most part, the skilled artisan, who was master of his trade, worked at home in his own house, assisted, it might be, by a few younger workmen or journeymen. Into his house and family he would receive one or two young lads to learn, during a seven years' engagement, the art and mystery of his craft; the master himself working and teaching them his work, feeding and clothing them, and receiving from them in return the value of the services which, as they became more apt in their work, they were able to render. The advantages of thorough training by the continuous care of the master were unquestionably proven by the universal adoption of the system. The ancient trade guilds grew and acquired their legal status upon this usage as their very foundation, and a seven years' apprenticeship formed the one necessary qualification for the possession of the right to exercise the following of any occupation or employment, art or craft, recognized amongst the handicrafts of the time. With the extension of trade and the wider use of machinery the number and power of the adult employed workmen increased, and with their increase of power came a jealousy, on the one hand, toward the masters; on the other, toward the apprentices, who were regarded as cheapening labor when employed in too great numbers. The conflict which arose between employer and employed gradually merged into one between capital and laborer. By dint of strikes the workmen at last prevailed, and in attempting to bring about a limitation in the amount of apprenticeship labor, brought about a result of quite another kind, and one far more disastrous than the evil sought to be remedied—the destruction of all the best and most important features of apprenticeship. Other issues aided in the accomplishment of the course thus entered on.

CAUSES OF THE DECAY OF APPRENTICESHIP.

Mr. George Howell has so well delineated the outlines of the change, that the transcription of a few of his words will suffice to complete the tale.

"But a change was coming o'er the spirit of the dream: another day was dawning fraught with still greater issues to the journeymen, for, instead of the old system of master and craftsmen, there grew up quite another kind of mastership and of hiring. The master had already begun to be less the craftsman and more of the employer. Capital was fast becoming the great motive power. Streams were first utilized, then steam; complicated machinery was being substituted for hand labour in many of the growing industries of the time; the master no longer worked at the trade himself, he directed and found the capital. The number of persons employed was also greatly augmented; instead of the old fealty between master and men there came estrangement more and more, until sometimes the workpeople scarcely ever saw their veritable employer. Under these circumstances the conditions of apprenticeship were completely changed, not suddenly, but gradually, until the apprentice became merely the boy worker, with less wages but more solemn engagements than a journeyman. The master to whom he was bound no longer taught him his trade; he was, so to speak, pitchforked into the workshop to pick up his trade as best he could, or to learn from the many journeymen who were there employed. It was no one's duty to teach him; there was no pay and no responsibility."

The present state of British commerce brings home the conviction that it is no idle cry that has sounded ever and anon in our ears, warning us of the deterioration in the quality of our manufactures and in the average calibre of our skilled artisans. International Exhibitions have from time to time afforded the means of drawing comparisons between the work of other nations and our own work; comparisons by no means always in our favour, often the reverse. Apprenticeship, with its wholesome rule, having decayed in everything but form, the lads who enter the shops are never properly instructed, but are made the drudges of the older workmen. What wonder that they acquire habits of idleness and carelessness that not only pursue them through the whole of their work, but, worse than this, corrupt and undermine their morals? What wonder that their manipulation is but half acquired, or that the methods and devices they learn to apply are those of half a century ago; ancient relics of prejudice and unscientific "rules of thumb," handed down by the tradition of the shops, a veritable survival of the unfittest? Without the shadow of a doubt the truth that there is—and alas that there is—much truth in the outcry concerning the inferiority of training and capacity of the British artisan, may be very largely imputed to the relaxation and degeneration of the old system of apprenticeship; for, with all its faults, it did at least provide that a skilled master should become personally responsible for the training of the apprentice in his craft. In that famous codicil to his will wherein Benjamin Franklin devised so many thoughtful legacies to promote the well-being of the land and city of his adoption, he wrote—and we must remember how intimate and how many-sided was his acquaintance with the condition of labour in his day—these ever-memorable words: "*I have considered that, among citizens, good apprentices are most likely to make good citizens.*" If this be true, seeing how rare a good apprentice is in the present day, the aphorism instilled in our ears as schoolboys, *Boni cives rari*, threatens to receive a weighty comment from the experience of the nineteenth century! Be this as it may, a very little consideration will show how real is the crisis to be faced, and how irrevocably of the past the apprenticeship of the past is.

WHAT IS THE EDUCATION NEEDED BY ARTISANS?

What, then, must be done? "Apprenticeship is absolutely necessary for the purpose of acquiring a practical knowledge of a trade; without this there can be no guarantee for good and efficient workmanship." Such is the dictum of one who speaks with authority from the point of view of labour, and the sentiment is the expression of that which all admit. Better education of the children—such, in fact, as is contemplated by the provisions of the Elementary Education Act of 1870—may, it is hoped, quicken the intelligence ere the age is reached at which apprenticeship begins: but will it do more? Nay, have we not indeed some reason rather to look askance at the work of the School Boards, and the scheme of education which they offer to our juvenile artisan population?

Cæteris paribus, the better educated our artisans are, the better workmen will they make; but we must take care that the education is of the right sort. Now, what will be the verdict of future generations on learning that the education which this great and powerful nation offers to the children of its artisans, to the class that will form the artisans of the next generation, was of a character purely literary, in no sense technical or even scientific? It is an education which, so far as it goes beyond the three elements of reading, writing, and arithmetic, is framed in all its essential features upon an exclusively collegiate type of studies; grammar, history, geography, foreign languages, and the like, being introduced, to the utter exclusion in all the most important of the successive "Standards" of any teaching of drawing, of mechanics, of the simplest facts of science or of natural history—of all, in fact, that most nearly concerns the workman throughout his entire career. In all the constructive trades the greater part of a workman's instructions are given to him in the form of working drawings. Yet we suffer the budding artisan to pass through the schools ignorant of the first rudiments of a science that is as essential to his work as are the four rules of arithmetic.

MERE LITERARY TRAINING GIVES DISTASTE FOR MANUAL LABOR.

And ought we, then, to be surprised if, in pursuance of the system we have deliberately marked out for the rising generation, we keep our future artisans, till they are fifteen or sixteen, employed in other work than sitting at a desk to follow, pen in hand, the literary course of studies of our educational code, we discover that on arriving at that age they have lost the taste for manual work, and prefer to starve on a threadbare pittance as clerks or bookkeepers rather than by the less-exacting and more remunerative labour of their hands? At the present moment, this tendency to despise a life of honourable manual toil in straining after a supposed

gentility would be truly pitiable, if the proportions it has attained did not awaken more serious apprehensions. It is an evil not confined to this country alone, but it is known, too, in the great cities of the States, of Germany, and of France. In a recent most able work upon primary education and apprenticeship in France, M. Salicis, a naval officer and cantonal delegate, speaks in forcible terms of the distaste for work of the children who leave the elementary schools of Paris :

"These little bureaucrats, boys and girls, outlaws from real labour by no fault of their own, come naturally to the end of their school course with one fear before them—that of being forced to become workmen and workwomen; but with one wish also, the boys to become clerks, the girls shopwomen. And hence this undefined, uncertain, overstocked class of bookkeepers, cashiers, salesmen, clerks, agents, with a thousand qualifications, scorning the cap and blouse for the sake of broad-cloth and silk hat; and the corresponding class, still more to be pitied, of *young ladies*, of no shop perhaps, and some with the coveted bonnet, but, alas! how procured?"

MERE LITERARY TRAINING OFTEN DESTROYS CAPACITY FOR MANUAL LABOR.

Obviously, with such facts as these staring us in the face, we must admit a flaw in the training given in our primary schools if its result is in so large a number of cases to destroy the natural capacity for manual labour. The fault is not so much in the amount of education as in the nature of the studies. For many trades the training of the hand to work may, and in some must, begin at an earlier age than that at which many children leave the elementary school. In some trades, indeed, the masters definitely refuse to take apprentices above a certain age; if they did take them the union would interfere. The taste for manual work is imbibed at a very early age, and there is not wanting evidence to prove most distinctly that even a very small amount of manual labour introduced into the elementary school serves to keep alive the capacity for active employment, and the manipulative skill of the fingers.

The first and most obvious step to be taken to bring about the urgently needed remedy is to render at least permissive, if not authoritative, a reform more or less sweeping in character in the instruction given in our elementary schools to boys and girls between the ages of ten and fourteen. For this class of children the provisions of our existing educational code could not possibly be more unsatisfactory than they are, when regarded from the point of view that these children will in a few months have to work for a part at least of their own living. The crumbling edifice of apprenticeship is made to repose upon a basis of literary studies which positively unfit the young apprentice to enjoy the few benefits which that obsolete institution can still offer.

The case is beset, then, with a double difficulty: that while the old system of apprenticeship is less and less able to afford a training worthy the name to the child of the artisan, the character of the education given him not only does not make up for that which apprenticeship cannot now give him, but even predisposes him against the career of manual toil to which apprenticeship is the necessary and only adequate introduction. The reform needed, then, as a first step, is the substitution of certain technical and scientific studies for some of the literary studies at present prescribed. Not that these literary studies are not in themselves good; quite the reverse; only they must be deferred till a little later in the educational course.

DRAWING AND SIMPLE ELEMENTS OF SCIENCE ESSENTIAL.

Amongst the subjects that will in lieu claim prominence are drawing,* and the elements of the physical sciences so far as they can be illustrated by the common things of everyday life. That is the first and easiest step in reform, but it does not probe to its depths the malady: at best it is little more than skin deep. The

* I am not here advocating drawing as a fine art, much as we may hope the fine arts might do for the culture of the future generation, but *drawing as a science*; by which I mean the representation of real objects to scale, as workmen have them represented in the drawings from which they work; as, in the higher development, engineers and architects represent them. As is well known, this is frequently, though erroneously, described as "mechanical" drawing. Erroneously, for the sketches by which directions to workmen are conveyed may be of the roughest "free-hand" type, provided only they are constructed upon the scientific methods in use in all the best workshops, and "figured"—that is to say, having the various dimensions accurately marked upon them.

distaste for work on the part of the artisan children on the one hand, and the incapacity and ignorance which result from the chaotic state of apprenticeship on the other hand, alike call for a more trenchant remedy. It is absolutely necessary, in the first place, that the children should enter earlier upon manual labour, that they may gain some skill with their fingers ere they pass the perilous point at which their taste or distaste for work may be acquired; and, in the second, that their education, the training of their mental capacities, should continue till a later period, when their minds are more matured and their faculties sharpened by experience. The whole question of technical education lies in the simultaneous solution of these two problems.

But how to arrive at a practicable solution? Shall we have a school in the workshop, or a workshop in the school? Or what other combination can we devise that will permit mental and scientific training to proceed after the age has been attained at which serious manual labour must begin? Hitherto we have been contented at most to organize night schools, evening classes, and so-called Mechanics Institutes for our apprentices, leaving it to their own caprice whether they chose to employ their leisure hours in self-improvement or squander them in self-indulgence.

HOW THESE EDUCATIONAL PROBLEMS ARE MET BY OTHER EUROPEAN NATIONS:—

THE NUMBER AND VARIETY OF SCHOOLS FOR THE TECHNICAL TRAINING OF ARTISANS ON THE CONTINENT OF EUROPE.

On the Continent of Europe somewhat different ideas have prevailed. In Belgium, Switzerland, Germany, France, and even Russia, there are innumerable examples of Technical Schools and Polytechnic Schools of all descriptions, which profess to teach with greater or less completeness the elements of certain handicraft industries. Overlooking the extreme diversity of type that exists amongst such schools, we have been apt mentally to throw them all together, and to refer to the supposed system on which they proceed as "the Continental system," in contradistinction to our British system of training, as we are pleased to term our obsolescent institution of apprenticeship proper. Nothing could be more misleading than this classification. It arises from lack of information as to the nature and work of such schools. It is not surprising, when such ignorance prevails, that the fallacy has in consequence been widely spread, that the long undisputed superiority of British-made goods was due to the superiority of the British system. On the contrary, that superiority, which arose out of quite other economic causes, was the very thing which stirred up the Germans, Swiss, Belgians, and French to devise schemes for training workmen more efficiently and intelligently than was done in England, since only by such means could they hope to compete with her industries. Let the significant fact, that a very large proportion of the foremen of workshops in our skilled industries are Germans or Belgians, attest the result of a higher technical training. Besides the innumerable *Gewerb-schulen* and *Real-schulen* of Germany, where a general preparatory scientific and technical education is given, that empire can now produce a long array of trade schools, sometimes organized as polytechnic schools, and sometimes devoted to particular trades, such as weaving, dyeing, or carpentry. In Switzerland such schools also abound; and in the commercial centres of Belgium they exhibit an extensive and healthy development. In France there are the technical schools of Douai, Chalons, and Aix, the *École La Martinière* of Lyons, the Horological School of Besançon, the Apprenticeship School of Havre, where workers in wood and iron are trained, and twenty others, including five or six in or near Paris. The technical schools of Paris present, indeed so much diversity in their several organizations and results that it would be extremely difficult, even by going over a much wider area, to find so many different yet thoroughly characteristic types. To understand how completely different are the systems of organization by which it has been sought to solve this great problem, it would be necessary to pass from the Polytechnicum of Zürich—the Technical *University*, par excellence—to the Horological School of Besançon, and from the *Kunst-gewerb-schulen* of Munich and Nuremberg to the unrivalled Paedagogic School of Moscow, and even then the list of types would be less complete than that which is afforded by the schools of Paris. In that great capital, in addition to the *Ecoles des Arts et Métiers*, the *Ecoles des Mines*, and the *École Centrale des Arts et Manufactures*, whose portals open only to an older and better educated class of students, and the great schools of modern type, such as the *École Turgot*, the *Collège Chaptal*, and the *École Commerciale* in the Avenue Trudaine, which qualify their pupils for commercial and mercantile careers, there are a group of technical schools intended for those whose primary education is not yet, or only just completed, and in which not only theoretical technical instruction is given, but where systematic instruction in some useful handicraft forms a necessary feature.

FOUR TYPICAL FRENCH SCHOOLS, SHOWING DIFFERENT METHODS.

From amongst these diverse types we select four, for each one of which its promoters claim that its practical success solves the knotty problem of the day. These four schools are the *École Communale*, in the Rue Tournefort; the *Institution de Saint Nicolas*, in the Rue de Vaugirard; the *École Professionnelle*, established by MM. Chaix et Cie, in their printing establishment in the Rue Bergère; and the *École Municipale d'Apprentis*, in the Boulevard de la Villette.

The first two of these may be said to exemplify, though with striking diversity of method, *l'atelier dans l'école*, the workshop in the school; the third is an excellent instance of the school in the workshop; while the fourth belongs strictly to neither type.

THE "ÉCOLE COMMUNALE."

The *École Communale*, situated in the Rue Tournefort, a crooked back slum behind the Pantheon, is the most recent of the group which we have selected. Founded in November, 1873, at the instance of M. Salacis, and with the co-operation of M. Greard, the energetic Director of Primary Education for the Department of the Seine, it is intended rather to prepare for than to supplant apprenticeships of a more rigorous type. The pupils of this school are not apprenticed at all in the ordinary sense; there is no contract, and they earn nothing. Most of them are very young—even as young as eight or nine years, nor have yet completed their elementary education. If they stay out the prescribed three years' course, they not only get as good a schooling as in any of the ordinary elementary schools, but they will also have seen something of constructive industry. During the first two years they are sent to work for a day at a time, in rotation, in one or other of the occupations of the workshop. An "apprentice" will thus have one day in the carpenter's shop at the bench or the lathe; the next he will be learning how to forge a bolt; the next he will devote to metal-turning—all his exercises being directed by practical workmen in charge of the shops. During the third year he will settle down to some one pursuit. The hours of actual labour are short, for the chief part of the day is devoted to lessons, only an hour and a half each morning and afternoon being given to manual labour. All learn drawing and modelling. Every pupil works from drawings which he has previously made to scale: no matter what he does, whether he is making a mortice-joint, rabbeting a window-frame, or filing down an iron nut, it is always done according to a careful sketch made beforehand. No articles whatever are made for sale; indeed all commercial elements are scrupulously avoided, and the objects given as exercises are hardly such as would serve a useful purpose: little joints of wood accurately squared; little cones or cylinders turned with perfect truth of line. Here and there a more valuable article, a model of a crane in metal, or a model system of bevelled gearing-wheels; but nothing more marketable. The genial director, M. Laubier, enters heartily into the work of his pupils. He has himself designed and executed many of their exercises,—the plaster casts, the geometrical models, and the ingenious scholastic appliances of the institution. He thinks his school to be the type of the elementary school of the future. He has need to be an enthusiast, to train successfully his fifty apprentices and his two hundred non-working children on a grant not exceeding £320 a year, salaries, tools, and materials included. He upholds the rotation system, believing extreme division of labour to be at this stage prejudicial to the development of the youthful faculties. He does not want to sell the produce of his workshops, as the construction of objects which would be made to sell would not afford so good a training for his boys. He admits that they do not work as rapidly as apprentices who have been brought up amid the hourly exigencies of trade; but he adds that he prefers cultivating their intelligence to quickening mere manual dexterity; that will come later. And what are the results? "Our apprentices," says the director, "being at once fit for useful work on entering the factory, are less often employed to run errands; they are better treated, steadier. I could tell you of young lads of fifteen who are actually earning two francs and a half, and two francs seventy-five centimes a day, and who in six months more will be paid as regular workmen."

THE INSTITUTION DE SAINT NICOLAS.

The *Institution de Saint Nicolas*, in the Rue de Vaugirard, is the oldest of the schools, having been founded in 1827. It is under the exclusive management of a religious guild known as the *Frères des Ecoles Chrétiennes*, who devote themselves entirely to education. In this truly remarkable establishment there are eight hundred and ninety boys, all children of artisans, all boarders. Of this num-

ber, about two hundred are apprentices who come here to learn their trade. None are admitted who can not already read and write. The greater part of the day is given up to manual work, only two hours being reserved for schooling on three days of the week, on the alternate three days the two hours are devoted to drawing. On entering the premises the visitor is first introduced into a sort of little museum, in which are exhibited articles made by the pupils of the establishment—a truly surprising collection to have been executed by little fellows from eleven to fifteen or sixteen years of age. Here there are picture-frames, bronzes, panels carved in oak, wood engravings that would not discredit either the *Graphic* or the *Illustrated*; farther on, in another handsome case, are telescopes, levelling instruments, a model engine, a saxhorn, and a trombone; and, in yet another, some exquisitely neat engraved maps, some of them executed on commission for the Government, together with the medals they won in Paris, Vienna, and Philadelphia. A varied assortment it would seem, and, indeed, the system under which such works are produced is without a parallel in this country. There are in the extensive premises of the school no fewer than sixteen *ateliers*, each let out to an approved master or *patron*, who is usually also the proprietor of a separate business in the city. To him are apprenticed for a term of three, or in some cases four, years some ten or twelve boys, all of whom at the end of that time will be able to take good positions as intelligent workmen. The trades thus taught are those of carpenter, wood-carver, turner in wood, optical turner, compositor, printer, wood-engraver, map-engraver (on stone), marble-mason, brass-worker, bookbinder, carver and gilder, clock-maker, portmanteau-maker, philosophical-instrument maker, and maker of wind instruments. The master of each separate *atelier* provides the materials, devises the work of the apprentices, superintends its execution either personally or by an authorized *contre-maitre*, and to him belong the products of the workshop. Nothing is made in the shops that will not sell; the apprentices learn the value not only of materials but of time; and though the works that successively pass under their hands are graduated to their capacity and experience, they are precisely of the same character as those which apprentices in any ordinary workshop would have to undertake. The masters and foremen of the various *ateliers* appear to take great interest in their pupils, and pride themselves on the success of their instruction. "These boys," said the foreman of the portmanteau-makers, "when they leave this room know the whole mystery of their trade from end to end. They can take the *brute* materials, and from them evolve a finished article." The apprentices of this same shop will earn at once from five to six francs a day, instead of the two, three, or four francs usually earned by young workmen just out of their time. They work as quickly as other workmen, for they know from the exigencies of their particular work that time is money. Several of the *patrons* and foremen of the little workshops are themselves former pupils of the establishment. The apprentices earn nothing during their term of service beyond a little pocket money when they are satisfactorily advanced. During the whole period of their apprenticeship their parents must contribute thirty francs a month for their board and lodging in the school. Great importance is attached by the *Frères* to the complete isolation from exterior influences ensured by this internment. The magnitude of the work will be understood when it is learned that the income and expenditure of this establishment amounted to about £40,000 in the past year, the services of the fifty worthy *Frères* who conduct the school being given at a purely nominal rate. There is a large gallery in the building for drawing and modelling, and excellent systems of instruction in model drawing and geometrical drawing have been here developed. Spacious refectories, commodious well-ventilated dormitories, and a large gymnasium form features of the school. The results of the system are significant. The aim of making intelligent workmen is really attained, and though the pupils have learned but one *métier*, and are in general better adapted for small businesses than for large, their repute for steadiness, skill, and general intelligence, is such that the *patrons* have little difficulty in placing their pupils when their term of apprenticeship is over, and usually in circumstances where their earnings are about the average. The same testimony is borne every where concerning the apprentices of this establishment; and the writer was informed by M. Véver, President of the Syndical Chamber of Jewellers, of Paris, a gentleman greatly interested in the question of technical education, and possessing every opportunity of forming an accurate opinion, that the boys of Saint Nicolas are so much more intelligent and steady than the average of workmen, that they are sought for by employers, and at the age of thirty have usually risen to the position of foreman or master.

THE ECOLE PROFESSIONALE.

The third type of apprenticeship school is that of the *Ecole Professionnelle* attached to the large and flourishing printing establishment of MM. Chaix et Cie. This school, founded in 1862 by M. Napoléon Chaix, receives two groups of pupils, the apprenticed compositors and the apprenticed printers of the house. The school room and the apprentices' composing-room, though contiguous to and overlooking the great busy *atelier* of the firm, are distinctly separate from it. The apprentices, of whom there are between thirty and forty, devote most of their time to the practical work of composing; two hours a day only being allotted to lessons in the school-room. Apprenticeship lasts four years, during the whole of which time the apprentices receive wages rising from fifty centimes to two francs fifty centimes for the compositors; and for the printers, who work at the machines in the great *ateliers* under the direction of a responsible master, from seventy-five centimes to four francs fifty centimes a day. The teaching comprises a special primary course for those whose previous schooling has been insufficient; a technical course, including grammar and composition, reading of proofs and correcting for the press, the study of different kinds of types, engraving, and the reading and "composing" of English, German, Latin, and Greek—in the two latter cases from a purely typographical point of view, without any attempt to understand or to translate; lastly, a supplementary course, which includes the history of printing, simple notions of economics, a little mechanics and physics, and a smattering of chemistry, dealing chiefly with the materials that they will hereafter employ—acids, oils, fats, carbon, soda, turpentine, &c. Everything is done with the utmost system. Every line set up by a pupil is, if possible, so much contributed to the current work of the firm; and as time exercises are frequent, the value of rapidity in work is learned. At the end of the apprenticeship the pupils elect—almost without exception—to become *employés* of the firm, and enter at once into the rank of participants in the yearly division of profits. Of nearly seven hundred persons employed, two hundred and fifty-eight are now participants, of whom about eighty are past apprentices. A much larger proportion are depositors in the *caisse d'épargne*, or savings bank, established by the firm, or are "insured" in its books. Even the youngest apprentices put by a portion of savings out of their small earnings. The principals of the house fear no strike now, as there are enough participants in the wealth of the house to carry on its business through a crisis. "*La maison pour chacun, tous pour la maison*," is inscribed in gold on one of the beams that cross the great *atelier*. The sum thus divided amongst the *employés* in 1878 exceeded £2,000. The financial results of these arrangements, at once educational and prudential in their nature, are most encouraging. M. Berger, the accomplished inspector of this department of the enterprise, attributes the substantial growth and prosperity of the business, now one of the largest and wealthiest in France, as much to one influence as to the other. He prides himself on the superior intelligence of his pupils and their technical knowledge, gained whilst they are in the very midst of a great business, and thus forced even to realize and keep *au courant* with commercial exigencies. The few who have gone out to take places elsewhere are also doing well.

THE ECOLE MUNICIPAL D'APPRENTIS.

The fourth and last of our typical schools is the *Ecole Municipale d'Apprentis*, which since 1872 has been at work in the Boulevard de la Vilette. No school has produced more striking results as yet, and none merits more careful attention. Beginning with 17 pupils in 1872, it now numbers a following of 221. The course lasts three, or in some cases four years. It speaks volumes for the efficiency of the school that out of seventy-two who up to the end of 1877 had completed the course and gone out into situations, sixty-nine are at the present moment pursuing the trade they have learned in the school, and are earning on the average four francs a day—some of them even as much as six and a half francs a day. A school which can receive young lads of thirteen or fourteen, and after a three years' course can turn out workmen at the age of sixteen or seventeen able at once to command wages of twenty, or in some cases thirty-three shillings a week, is something so wholly new that its organization merits the most profound study. Founded, on the suggestion of M. Gréard, by the then Prefect of the Seine, M. Léon Say, at the expense of the city of Paris, it began its work in premises previously used as a factory of aneroid barometers, additional schoolroom accommodation being obtained in the adjacent dwelling-house. The object of the school is simply to make good workmen. The education it offers is absolutely gratuitous, and even remunerative to the pupils, for they receive every week a "gratification"

varying from a franc and a half to three francs. None of the pupils are boarders. None are admitted until their primary education is completed, and then only after an easy examination. Five hours a day are given to studies, six hours to the work of the shops. The teaching of the schoolroom is both general and technical in character, mechanics, physics, chemistry, and technology being added to the usual programme of literary routine, whilst drawing and modelling occupy a prominent place. The system of solid geometry taught in the schools is excellently conceived and admirably followed. M. Müller, the director, himself conducts this and some of the scientific branches of study. All the apprentices learn also to sketch bits of machinery or even entire machines, figure the sketch from actual measurement, and then with rule and compass draw them carefully to scale. There are two principal workshops, one devoted to the workers in iron, the other to workers in wood. The trades actually taught are forging, metal-turning, fitting, carpentry, wood-turning, and pattern-making. A small workshop for teaching the manufacture of philosophical instruments has also just been organized. During his first or preparatory year the apprentice so-called—there is in reality no formal contract—is making the round of the various shops, taking a fortnight in each in rotation. There is therefore no haste to specialize his work, and he has the opportunity of discovering the pursuit for which he is best fitted, while gaining information and intelligence. His first year over, he settles down to serious work in one of the six categories of labour: henceforth all the articles he makes are saleable, and indeed of some value. Still, although the commercial element, eschewed in the Rue Tournefort, here steps in—to the profit of the municipality, be it said, rather than of the school—the apprentice does not sacrifice theory for practice. No single object must be attempted before the working drawing of it has been made out in plan and elevation; and the niceties of true surfaces and exact angles are scrupulously insisted on. Enter the forging and fitting shop, where over a hundred embryo workmen are busily, not to say noisily, employed, each on his all-absorbing task: they hardly look up as the stranger passes along. Here are three novices being taught to forge a hammer-head, learning to “strike,” under the direction of a young foreman; and he *does* teach them too, with a will. Here an older group are working out a piece by themselves at another forge. All down the long room are benches with vices, and in the middle the heavier machines, lathes, slotting-machines and planing-machines—the latter designed and constructed only last year by the pupils themselves, and containing a valuable improvement first conceived in the brain of the able foreman of the workshops. Here, a large pinion is being turned; there, the parts of a vice are being filed into shape, while in the corner an apprentice of one week’s standing is trying to file up into perfect form a simple square bar of iron fresh from the forge. After that he will pass to a task a little more difficult, following the course prescribed by experience. Almost all the tools are made by the apprentices themselves. The steam-engine which moves the heavy machines is under the charge of two pupils, of the second and third year respectively, their services being devoted for a fortnight to officiating as stoker and engineer. Healthy and actively industrious, the lads toil at their work, and three foremen suffice for the efficient superintendence of the hundred! Above is the carpenter’s shop, where an equally numerous clientèle are equally hard at work. Here, too, we find originality of design and thoroughness of execution. Several of the machines—for example, a ribbon-saw—were made in the establishment, and were amongst exhibits of the school which attracted so much notice in the central pavilion of the Exposition Universelle of 1878. The first exercises in carpentry and in turning are literally ‘exercises’: useful to the last degree to their constructor, but of no marketable value. Here one realizes one advantage possessed by this municipal school over those in which the *atelier* is simply the workshop of a great business. In the early stages, when workmanship is very imperfect, it is not always well to strive to produce a saleable article. Better waste wood, says the superintendent of the shops, than spoil the making of a good apprentice. Better to let the young workman see something of all the different corners of his trade, than by too fine a division of labour to keep him all his years learning only to shape chair legs! And he is right, if the general look of intelligence and workmanlike style of his young charges afford any indication of their capability of well fulfilling the career they have chosen. From seven in the morning to seven in the evening are the hours of school, with an hour’s intermission for dinner, and two shorter recesses. Work over, they disperse to their separate homes, for there is no boarding. M. Müller points out that the cost of setting up these shops, with all their tools and appliances, has been at the average rate of £11 3s. for each of the 175 places nominally provided in the accommodation of the school; while each of the present 221 pupils, as he passes through the school, costs the municipality on the average an annual sum which is, as it happens, almost

equal—namely, £11 2s., instruction included. When the extensions of the buildings now in progress are completed, a very slight increase of total cost will suffice to extend the benefits of the school to a much greater number of pupils. The school property and furniture have already cost the city of Paris 750,000 francs (£30,000), including the land and buildings, and the school is costing it 60,000 francs (£2,400) a year for working expenses. To set against this are the sums received for work sold, and the value of the instruments, models, and appliances fabricated in the school, and employed either in the school itself or handed over to one or other of the municipal schools, and which must amount to several hundred pounds yearly.

We have dwelt at some length upon this school, inasmuch as, regarded from the point of view of practical results, it appears to present by far the nearest approach to the ideal of an apprenticeship school. Not ignoring what is so valuable in consideration of the circumstance that the training is to be a preparation for after life—the commercial value of the time and labour—it differs from the Institution de Saint Nicolas in regarding the aim of producing good workmen as higher than that of establishing a self-supporting school. The Institution de Saint Nicolas is, thanks to the self-denying labours of the Frères, self-supporting so far as the ateliers are concerned, though the pupils pay for their board and lodging. The Ecole Professionnelle of MM. Chaix et Cie., which is but one example of a considerable number of similar establishments, is looked upon as one of the main causes of the prosperity of the concern. To establish such a school in any large business establishment requires little additional expense beyond the salaries of teachers. The Ecole Communale is a most valuable experiment, and shows with what slender outlay some useful instruction in manual labour can be added to the resources of an elementary school. The Ecole Municipale, with its kindred schools at Lyons and Havre, enable us to realize what an apprenticeship school may become if taken in hand by a rich and powerful municipality.

NO MERE COPY OF ANY SINGLE MODEL DESIRABLE FOR OTHER COUNTRIES—FORMS OF SCHOOLS MUST VARY WITH SPECIAL NEEDS OF COMMUNITIES AND INDUSTRIES.

Turning once more to the conditions which obtain in our own country, the thought naturally occurs—which of these very different types of school will best suit the requirements at home? On which line shall we proceed in our attempt to adjust to the altered social and industrial conditions of our time the apprenticeship of the past? Probably no one of these varied types will meet the thousand possible cases which may present themselves in the working out of the problem. Possibly there is room for all these types of apprenticeship school, side by side, or room even for new and untried types. One may adapt itself better to one locality or industry, another to another. Our business is not to copy, but to create and to develop for ourselves that which meets our own case. Much as will depend upon the character of each individual industry, all experience shows that there are other factors in the problem of scarcely less importance and that much also depends upon the individual proclivities of the director of the school, the industrial enterprise of large firms, the far-sightedness of wealthy corporations. In France many of the schools have been initiated by the municipal or communal authorities. In Germany it is the town or the State that has made the venture. Will our Town Councils or our School Boards, ever think the experiment worth a trial, or is centralization too fierce and too frigid to countenance the attempt? All that is most valuable in the results obtained in the majority of the typical cases afforded by the Parisian schools can also be attained by private local enterprise, if guided wisely and well. Private local enterprise may surely hope for success at least as great at home as that which it has already won across the Channel. And obviously the various industrial establishments know best the strength and weakness of their own resources. If a guiding and organizing central institution is needed, and it probably will be, it will be forthcoming so soon as there is work for it to do. But no central organization or institution can be expected to do the work which, at the outset, the local industries must initiate for themselves and develop by their own resources, and direct by the light of the consciousness of their distinctive needs. Then, and not till then, shall we be able to form an exact estimate of the social and industrial conditions under which *the apprenticeship of the future* may become a living reality. Then, and not till then, will the apprenticeship of the future constitute a powerful instrument, not merely for the intellectual, moral, and social improvement of the working classes, but for the promotion of the wealth and prosperity of the whole nation."

SYLVANUS P. THOMPSON.

V.

THE HIGHER EDUCATION OF MECHANICS FOR THEIR TRADES.

[By Louis J. Hinton.]

ITHACA, N. Y., 1872.

HON. JOHN EATON, *Commissioner of Education.*

DEAR SIR: Emboldened by the fact that a previous letter of mine was deemed worthy of insertion in your last Annual Report, I resume my pen to write some after-hours-of-labor-thoughts, upon the subject of my first letter—namely, “The Education of Artisans.”† * * * There is one great difference between the young American mechanic and his compeers in England. The American has received an education, both at the common school, and through his freer surroundings, that has tended to mould him into habits of self-reliance and aptitude to do or learn anything in after years, if he can only see that it is to his advantage. In England, however, the history of the mechanic is very different; he generally has to commence work at such an early age, and often without having received any schooling even of the plainest sort, so that by the time he is a man he lapses into the mere drudge, reluctant or unable to exert himself with a view to future elevation. Even opportunities to do so there are but few, and the highest motive for exertion is to be able to save enough money to pay the passage to this country. I do not mean this general statement to apply to every one, either here or there, but I do assert that I knew far more workingmen in the old country of fine natural abilities and hard won acquirements who had no hope beyond the mere daily working at their trades to the end than I have since met here. No American mechanic with any brains but has a hope that in the future he will be something higher than he is to-day. The chances are that he will be.

We cannot tell for certain how it will be in the future as we grow more crowded, hence we must endeavor to give him superior facilities for improving himself in all that relates to the occupation of his future life, that he may be able to avail himself of every point of vantage likely to result in good to himself, and through him, to the nation.

THE NEED OF ELEVATING THE AMERICAN IDEAL OF THE DIGNITY OF ARTIZANSHIP.

Permit me to notice, by the way, that there exists among American youths too great a tendency to shun trades and rush into large cities seeking clerkships, etc., anything rather than a trade—manual labor being left to the immigrant from the old world. This evil is generally known. What is the remedy? If physical work be considered degrading, as it is considered by too many, there must exist something defective in the earlier training of those who so consider it. We must endeavor to ennoble labor, and elevate it to the highest pinnacle of honor. Toil of all kinds must be made interesting to the mind of the toilers; that it will become a pleasure, and may induce many who shun it to take up the plane or chisel. To do this we must begin at the beginning—at the common school, giving to each child an education that will tend to make the business of his future life easier of acquirement; in other words, training capacities to future needs. For instance, supposing a child to display an interest in wood-carving, his parents desiring him in the future to follow that trade, would it not be an easy task, without neglecting his general training, to so shape his education as to make him acquainted with much of the theory of that business? At twelve years of age he could easily know more of manipulation than many mechanics of mature years now know. Then we must have facilities for progressive education; not that there are no schools deserving of high praise for what they accomplish, and accomplish well; but they are all too few; we want many more to follow the example of the Lowell School of Practical Design‡ in the Massachusetts Institute of Technology, Boston, and give a special course of free instruction in practical designing adapted to manufactures of all kinds.

It is pleasant to know that Congress has already done something in the right direction by the act passed in July, 1862, appropriating a portion of the public lands pro rata to the States for the endowment of schools of agriculture and the mechanic arts. The admirable results that have followed this enactment show that it was needed. Three hundred and ten professors and assistants are employed in giving instruction to more than two thousand students who are pursuing a regular course of study in agriculture and the mechanic arts.

† See page 526 of Annual Report of the Commissioner of Education for 1871.

‡ For account of this school see Chapter II, Part IV, of this Report.

SUGGESTION OF AN INSTITUTION SIMILAR TO THE SCHOOLS OF SOUTH KENSINGTON.

It would be a good thing if we could supplement this means of a higher education for those who propose to lead in mechanics and agriculture, by the establishing of some such institution as that at South Kensington, London, where they give instruction in the fine arts by means of numerous branch schools all over the country, to as many as a hundred thousand pupils yearly, with the number constantly increasing. The following is a brief statement of their method of working. 1, Public teaching; embracing schools of art and local associations of primary schools for teaching drawing; annual inspections of the local schools and primary schools combined in associations; annual local competitions; central museum at Kensington; loans of models and books on art from the museum to local schools; exhibitions in the localities of the articles thus lent; pecuniary grants to the local schools for the purchase of models, and in certain cases towards the expense of first establishment. 2, Training of Art Masters; examinations of fitness and graduated certificates; free admission of exhibitioners from the schools of art, and of pupil teachers intended to become art masters; normal schools of art; certificates to teach elementary drawing given upon examination to primary school teachers of either sex. The summary programme of the central schools of drawing is as follows: (1) *Elementary Course*: Geometrical drawing; linear perspective; free-hand drawing with shading; drawing from relief; figure drawing from lithographed or engraved models; principles of water-color drawing. (2) *Superior Course*. Drawing from relief; painting; ornaments; flowers; still life; landscape. (3) *Special or Technical Course*. Art Anatomy; elementary composition; designing; modeling; architectural and machine drawing. This shows us what we might also set about doing.

A BOARD OF ARTISTIC TRADE EXAMINERS SUGGESTED.

Then it would be a capital idea if we could manage to establish some means by which highly skilled artisans who work, say, at wood or stone carving, at fresco and ornamental painting, jewelry, etc., could submit themselves to an examination by a competent board of examiners, and if found equal to the test established, obtain a diploma that would entitle them to place at the end of their name some distinguishing letters similar to M. A., D. D., etc., that the public might know such men to be masters of their trades. This would probably prove a beneficial incentive to young mechanics to exert themselves to improve and learn all they could that they might some day gain the honorary and proud distinction of ascribing themselves masters of their crafts. The degree would be more valuable if conferred by a State, or National Board. The idea was first broached in England by Beresford Hope, M. P., and Royal Academician, but the time proved unfavorable. The reform agitation for an extension of the electoral franchise drove out of sight every minor point affecting the working classes. But if the idea be a good one, there is no reason why it should not be considered here.

THE PRACTICAL UTILITY OF PUBLIC ART MUSEUMS.

Then we sadly need good museums in all our large cities. The good such institutions effect is immense; not counting the delight afforded to the educated public. Europe is far ahead of America in this particular, though in the future we ought to have as many and as good museums, as all Europe put together now has. Even busy manufacturing Birmingham, England, can afford to think of museums of art. By a vote of the town council at that place, arrangements are completed which will provide the town with an art gallery unrivalled anywhere in England, outside of London. Many times before coming to America, the writer visited the British and South Kensington Museums. It was constantly a delight to him to observe the orderly throngs of working people viewing everything with evident interest and respecting all they saw, as if it would be a sacrilege to touch or damage anything exhibited. That many whom I saw there carried away with them valuable ideas and suggestions, an instance that came under my own notice, will serve to show.

A STRIKING INSTANCE OF SUCH UTILITY.

I count among my friends in England one who presents a remarkable instance of steady, perseverance in the achievement of a definite aim. Originally a wood sawyer earning a pound a week, he has lifted himself up, until, when I first knew him he could make ten pounds per week, more easily than he had formerly earned the one. While working as a sawyer that inexplicable gathering together of circumstances we call chance threw some ivory chess men in his way, simple things, but to my friend they suggested a new field for his industry. The heads of the horses particularly claimed his attention. He thought that they could be carved

much truer to nature, and by dwelling upon the idea he came to think that he was the man to carve them, but where was he to find a model? There were plenty of live horses around, but somehow he could not study them. He was perplexed until he bethought himself of the British Museum, where he had seen a model or rather gigantic cast, of the head of a horse, copied from one of the ancient classic buildings of Greece. I remember his model, well; beautiful and perfect from whatever point one looked at it. It is enough to write that here he had found all that he required. He had a good knowledge of free-hand drawing. That knowledge proved invaluable to him. Finally in all London there was no man who could turn out such perfect and delicately carved ivory horseheads. He gained almost a monopoly of the business to which he added the turning of billiard balls. This anecdote would be of no great worth, (for there are many men as ingenious and as persevering,) were it not for one point; the nation had built a museum, and filled it with specimens of all that is good or rare in antique sculpture or high and perfect art. Amid that great collection was placed the one model that this wood sawyer needed to see in order that he might lift himself from daily drudgery into an occupation which was not only remunerative, but in itself a delight. This instance which chanced to come to my knowledge is but a single example of the indirect benefit accruing to the people from public art museums. It is easy to see how such indirect results must be multiplied many times when museums such as that of South Kensington are made with direct reference to the needs and uses of the workers. This man was ingenious and had a large fund of original talent. Such men turn the most trivial circumstances to good account. For instance, we have all seen of late years, enameled iron saucepans and kettles. There seems to be little connection between such kitchen utensils and the studio of the artist; yet some observing minds have noted the discovery and deemed that the enameling of iron could be utilized in the service of art. This has resulted in the production of plates and panels with surfaces sufficiently fine for the reception of paintings as minute in finish as the rarest works of the most eminent French enamelist.

WORTH TO A COMMUNITY OF INTELLIGENT ART WORKERS.

This is but an instance among many to show how it pays to have men in the community whose minds are trained to scientific observation, and who are capable of creating the beautiful from the most common. It is evidently to the interest of the public to increase the number of such ingenious and useful workers; to effect this it needs but to secure for our mechanics and students, the requisite technical artistic and scientific training while they are still young enough to be moulded into habits of close observation. The result of such general training would inevitably be wide embracing and seen alike in the creation of new industries, and the perfecting of old ones. As I have before written, in my opinion, free-hand drawing is of incalculable benefit in developing the power of correctly judging of proportion, and in training the eye and hand. This can without doubt be taught even to young children, if only the right method of rendering the study interesting, be used. Not the common practice of a half hour or hour at copying from some florid scroll of the purpose of which the pupil is ignorant, and whose lines to him instead of being lines of beauty are but unmeaning flourishes. The Greeks of old were wiser. They took their pupils out into the streets, showed them the buildings around, explained the architectural lines and decorations, until the pupils knew, when copying, the meaning, use, and relation of the lines drawn, to the whole building. This was also their method in explaining and teaching the points of the many other productions of beauty and utility, that have made us moderns still admire and envy the ancient Greek power of imparting beauty, one might almost say imperishable beauty—to all they touched.

Those who believe that we are as highly educated as a nation as it is desirable for us to be, if there are any such, are most lamentably ignorant of the facts that show only too plainly, that we have but begun to teach, not that it would be desirable, if it were possible, to make every workingman a Professor Tyndall, a Faraday, or an Agassiz; but that we wish to make every citizen capable of comprehending the teachings of the able men whom God has gifted for our benefit. That we must do more than we have done or are doing is no mere opinion. It is the necessity of the age, growing stronger every day, and perforce will create, out of its urgency, the means to form such men as the world most needs. Three hundred years since, the English-speaking race possessed but one Sir Walter Raleigh, while to-day we can find five hundred or more as daring and as skillful navigators.

The expansion of the world's commerce compelled the formation of men capable of carrying it on; and so the conquering of the vast mines and stores of material wealth lying in the bosom of this great nation, and the making them available for the use of mankind, will compel the educating of hundreds of men where we now

have but few able to bring their trained intellects to the work. The radical defect of the past must be remedied. It is no longer possible to so shape the facilities for education as only to produce the few great men. We must shape our methods to reach the masses. In the average men of this Republic lies its wealth.

IMPORTANT STATISTICAL STATEMENT BY HON. J. W. HOYT.

I find a remarkably succinct and clear illustration of my argument in the report on education by Mr. J. W. Hoyt, United States Commissioner to the Paris Exposition of 1867. The Extracts show how education or the want of it affects the increase or decrease of the wealth and power of nations.

"It was about the year 1806 when with a population of 10,000,000 and embarrassments of poverty and humiliation such as few nations have ever met, that Prussia began in earnest to devise and make available to a suffering people the scheme of public school instruction which now challenges the admiration of the world; and which in the fifty years between that date and 1856 brought to its 17,000,000 of people an increase of more than three hundred per cent. of production over that of the former fifty, an increase resulting from an improved agricultural industry and a manufacturing wealth apparently created as political economists declare, out of nothing."

"In 1818, with a population over 11,000,000, the expense of pauperism to the English Government was little short of £8,000,000. In 1859, with a population less than 20,000,000, the percentage of paupers in England and Wales was 4.6 to the whole number, and the expense of these in the pro rata of 5s. 6d. (\$1.87), and costing the government in connection with special aid from the city of London, scarcely less than £10,000,000. Between these dates 1833 saw the first public grant to elementary instruction in the pitiful appropriation of £20,000 annually for a term of five years. While the public economist is figuring the total of these and other bills of expense that cover the 'poor rates' of intervening years, the public educator may be permitted to speculate as to the probable results, had these sums been exhausted in inaugurating and encouraging the educated labor of the lower classes."

Mr. Hoyt's report is full of valuable information upon the progress of popular education, both in this country, and in Europe. Is it well worthy of the attention of one interested in educational matters. In reading it and the reports of the other gentlemen sent as Commissioners to Paris at the same time, it was suggested to me that it would be a good idea if Commissioners could be sent to Vienna. Practical artisans, capable of observing and judging of all progress or retrogression observable in the specimens of their handicrafts exhibited, and then able to place the results of their observation in a clear report. This was done by the Committee of the Society of Arts in London, at the time of the last great Paris Exposition, and resulted in many very valuable reports, making a highly interesting volume; valuable because written by men who knew the practical needs, manipulation, and details of the industries and products they wrote about. This is however a digression,—to return: Such facts as Mr. Hoyt gives have alarmed the English people, and they are now making great exertions to remove the blight of ignorance from their midst. Here in America the value of free and common schools for all has long been recognized, until it is like beating the wind to argue in favor of them. Not that by any means we have managed to reach all. There is still ample scope for the school master to teach the three "Rs." But supposing we had reached the point of perfection attained by the Chinese, with not more than one or two per cent. of our population unable to read or write; what then? Will the American people be content, like the Chinese, to stay at that for thousands of years? The answer is no! emphatically no! As Mr. Gladstone describes this as "the age of the working-man," we have room to teach the farmer, the mechanic, in fact all, much that will enable them to work to greater advantage, and to imbibe a love for refinement, education and art. We can bring home the truth of Keats' ever fresh and poetical line, "A thing of beauty is a joy for ever," to every cabin in this wide land. We can show that beauty is as practicable a thing in the construction of a poor man's house as in the erection of a marble palace. That the interior can be made as pleasant to the eye and sense as the more costly building.

INTELLIGENT TASTES OF AMERICAN WORKERS AS CONTRASTED WITH EUROPEANS.

We have a proof of how capable the Americans are of absorbing all that is good, in the almost marvelous demand for literature of a high character. Go to the small country village, the far away farm house, and we shall find such works as can only be found in the libraries and bookshops of the rich in the old world. It is the same

in the cities. Though I have sometimes seen a piano in a workmans' house in the old country; in this, the sight is so common as to cease to be a novelty. Such illustrations serve to show the capacity and craving of the American common folks, for refinement and the leveling of the way to the means of enjoyment formerly the exclusive privilege of the rich. This is as it should be in a Republic.

INDIFFERENCE TO ART WORK SHOWN BY AUTHORITIES OF CENTRAL PARK, NEW YORK.

The want of taste, artistic and otherwise, is not confined solely to those dubbed "the working-classes." Even in that beautiful garden the New Yorkers are so justly proud of—Central Park—may be seen several most glaring instances of lack of real taste and judgment, as to the fitness of things. For instance, the granite bridge near the seventh Avenue entrance. This is a superb specimen of stone cutting, with a fine example of a double twisting parapet, almost the only one I have seen cut out of stone in this country. It must have cost some thousands of dollars before it was finished; yet the authorities seem most anxious to cover it up from public view, permitting the gardeners to carefully train some fast growing vine over its beautiful and costly moulded fronts. This is not the only bridge so served. They should be kept free from vines, if only to preserve them, plants of the parasite order being most destructive to cut stone work if allowed to cling to it, not to mention the propriety of allowing observing stone cutters or builders to study if they wish well executed specimens of architecture. We have not so many like those in the Central Park that they need be hidden. I have recently seen in Chicago sign-boards, from a foot to two feet high, stretching along the whole length of costly cut stone fronts, hiding and marring some of the best effects of the architects who designed the fronts, but not the sign-boards. I can fancy the annoyance of an architect when he sees such unsightly additions to his carefully designed façade. On one building I noticed a sign-board that hid, or nearly so, a whole row of carved stone capitals that must have cost considerable to cut. These are but few of many glaring instances of vandalism. No doubt such lack of taste will be considerably lessened with the advancement of the American people in art education. I merely cite them to show the need of such education. * * *

The writer proceeds to discuss the subject of the hours of labor, which, although ably treated, and in itself of great interest, is omitted as not directly related to the matter of this Report. He closes his letter with the following suggestions :

* * * "To recapitulate before concluding, it seems to be quite within the scope of a wise statesmanship to study the following questions: (1.) Whether it would not pay to attend to the earlier education of the mechanic and working classes, affording facilities for progressive study in what is called technical education? (2.) Whether National and State museums and art galleries would not essentially contribute to the perfection of such an education? (3.) Whether such museums might not have commissioners attached to them capable of examining the artisans that study in them, and empowered to issue diplomas and certificates of merit to such of them as can stand the tests prescribed?

Respectfully submitting the matters I have touched upon to the consideration of our public men and Legislators, as among the things that need to be attended to in the present stage of the civilization of America, I am, dear sir, with high regard,

Your obedient servant,

(signed) LOUIS J. HINTON.

VI.

TECHNICAL MUSEUMS.*

* * * * *
The greatest want of the time—and this not for Great Britain only, but also for the chief centres of culture, of population, and of manufactures in the United States—is a series of trade museums exhibiting raw products, and the uses to which they are put in every stage of manufacture. Manchester possesses an admirable and well-supported society for the promotion of scientific industry, whose exhibitions of economic appliances are most useful; but no museum of textile

* Extracts from an article in The American Architect & Building News [March 8, 1877, p. 69.]

fabrics exists in Bolton, Bradford, Leeds, Manchester, Nottingham, Oldham, Paisley, Preston, Rochdale, or any other seat of the manufacture. A private museum of firearms is little known at Peckham, in the south of London, while the chief seats of the manufacture of arms are the great towns of Birmingham and Sheffield, and the still more distant works at Elswick. Northampton and Wellingborough have no museum of the leather industries; and Stoke-upon-Trent and Lambeth alone are the possessors of art schools which directly serve the potteries of those districts; while, in regard to household decoration, the designing of furniture, and all the industrial arts allied thereto, the Museum of the Science and Art Department at South Kensington has hitherto failed to furnish from the ranks of its students, even one whose training has been sufficiently practical to afford the least chance of permanent employment. That the Museum has been worth all it has cost is unquestionable, nevertheless. Dr. Forbes Watson closely parallels an observation made long ago in an American journal by the present writer, when he says, "The existence of the South Kensington Museum has in no way originated the movement of artistic reform now pervading all England, although it has accelerated its pace. After Pugin had first traced the principle of functional truth and organic development in architecture, and after Ruskin had shown the application of the same ideas to the whole range of art, whilst Owen Jones established their application to color and ornamentation, it was quite certain that those ideas would in time prevail, because, in a progressive country like ours, all ideas founded on truth and nature will always force themselves, though gradually, into general acceptance. South Kensington has not developed a single man with artistic initiative who can be compared to those just named, nor has it added a single new idea to those which men propounded before it was ever thought of; but there are many ideas which, but for it, would have continued to this day as mere suggestions, instead of being already widely introduced into the practical arts of this country." These words, the truth of which is easily demonstrable, established the point that on the lowest estimate of usefulness of a finely furnished art-museum, its resulting advantages to a nation are very great,—a lesson that is quite as valuable on the western as on the eastern side of the Atlantic.

VII.

ADDITIONS FROM INDIA TO COLLECTIONS OF SOUTH KENSINGTON MUSEUM.

The London Times of Jan. 4th, 1883, in a notice of the conferring by the Indian Government upon Mr. Caspar Purdon Clarke, of a decoration, valuable as a recognition of special service, shows, incidentally, the direct and important influence upon manufactures and trade resulting from the World's Exhibitions.

This account is also of interest, as reciting an instance of cordial cooperation, on the part of Royalty, the Indian Government and the Museum authorities, in the promotion of an artistic exploration; with the direct purpose of aiding in the development of art industries.

Thus the wonderfully rich and profuse stores of the South Kensington Museum are being constantly augmented. This is a fact full of significance and worthy of consideration on the part of authorities in the United States. If these intelligent Englishmen think such efforts desirable merely to complete their very large collections, may not the creation of similar art collections be worth the attention of Americans who desire to promote their own industries?

Mr. Clarke, who is thus honored for his acquirements and successful undertaking, received his art education in the South Kensington Museum schools, where he took the medal for architectural design in 1865. He was subsequently an assistant to General Scott, the Director of the Museum works, and, as such, resided in Italy two years, supervising the Mosaic reproductions being made there for the Museum. He later passed two years in Persia, employed in constructing the British Embassy buildings, and in artistic explorations.

In 1875, he went with Hon. George Napier, on a mapping expedition through Kurdistan, and was afterwards sent by Sir Philip Cunliffe Owen, Director of South Kensington Museum, on an artistic exploration of Syria and Turkey.

Having had all this experience in acquiring a familiarity with oriental art, he was put in charge of the Indian Section of the British Display in the Paris Exposition of 1878. The story of the incidents attending the preparation of the East Indian display at Paris, and of the subsequent selection of Mr. Clarke for the expedition to India, is given in the *Times* as follows:

"The Indian Government having resolved not to participate so extensively in this as in former international exhibitions, his Royal Highness the Prince of Wales, the President of the Royal Commission, most generously offered the loan of his Indian collection to the exhibition. With these and the contributions of a few commercial exhibitors, Mr. Clarke produced the most splendid display ever made by India in an international exhibition, which had its immediate effect in creating that great demand for Indian art objects in this country, and on the Continent and in America, which has been growing year by year ever since. One American house alone is now spending £60,000 a year in the exportation of the minor art wares of India to America; while the *Bon Marché* at Paris is known to have spent £400,000 on them since 1878. Upon the transfer of the India Museum in 1880 to the charge of the Science and Art Department, Mr. Clarke was appointed to assist in its rearrangement. By the elimination of the natural history and raw produce collections, which were taken over by Kew, and of the antiquities, which were sent to the British Museum, the commercial importance of the historic art manufactures of India was brought into the fullest prominence at South Kensington. This proving of great public interest, it was arranged between the India Office and the Science and Art Department, that Mr. Clarke should proceed to India charged with the mission of collecting such industrial art objects as should complete the scientific arrangements of the series in the Indian Museum. For this purpose the Indian Government contributed £3,000, a sum which, resulting from the charge for admission on reserved days during the exhibition of his Royal Highness the Prince of Wales's Indian presents, had remained in the exchequer of the Indian Office by his Royal Highness's wish until some occasion on which the money could be used in the interest of Indian art. To this the Science and Art Department added an equal sum, and in October, 1880, Mr. Clarke started for India, where he remained until the month of May last year. All the principal towns in Hindoostan and the Deccan were visited by him, and, assisted by the cordial co-operation of the Indian Civil Service, a large collection has been formed, which in bulk alone exceeds the collections hitherto exhibited in the India Museum. From his special art education and long and wide experience of the East, Mr. Clarke was enabled to find and acquire many objects which ordinary travellers would overlook, such as native furniture, and vessels in brass and copper, gold and silver of antique mould and decoration. As an architect he particularly directed his attention to the acquirement of examples illustrating the different styles of Indian domestic architecture both in encaustic tiles and wood. The time has not yet arrived to describe these. It is sufficient on the present occasion to state merely that Mr. Clarke has discharged his mission to India with conspicuous ability and success; and that, in recognition of his valuable services, the Indian Government has conferred on him, in connexion with the anniversary of the proclamation at Delhi, in 1877, of Her Majesty as *Kaisar-i Hind*, the Companionship of the Order of the Indian Empire."

VIII.

LOCAL INDUSTRIAL ART MUSEUMS IN GREAT BRITAIN.

The following report, taken from the London *Times* of March 9th, 1882, of the interview between the deputations of the provincial cities and towns of Great Britain, and the Governmental authorities upon the subject of affording additional facilities to the local educational Museums, is of interest as showing the estimate placed upon the local exhibition of objects of industrial art, by the several com-

munities in which the museums are situated, and is also of value as giving a condensed statement of the progress made during the last ten years in providing ever increasing facilities for the dissemination of training in industrial art.

The Times evidently considered the matter one of great importance, giving to it more than a column in its editorial page, and earnestly combatting any movement which threatened to impair the value of the great collections in the capital, by dispersing them in these loans; arguing rightly that it was the unity of a collection, its value as an organic whole, which gave to it, its chief importance.

These arguments apply especially to the collections of the National Gallery and the British Museum.

As showing the attention given to the creation of these industrial art museums by the cities and towns in Great Britain, because of their direct relation to the manufacturing interests of the country, this interview may be commended to the consideration of the local and state authorities in the different states of the United States; as furnishing an example of how other manufacturing communities provide for the improvement in their manufactures by the training of the workmen,—a lesson we may well take to heart. The indifference of many American communities,—although awake to the value of public schools,—to the importance of providing opportunities for any general training in industrial art, is surprising.

THE GOVERNMENT AND EDUCATIONAL MUSEUMS.

Yesterday afternoon a large deputation from provincial towns, with a large number of members of Parliament, waited upon Earl Spencer and Mr. Mundella, at the Privy Council Office, to urge that the Government should give increased aid to local museums of an educational character. In the course of the interview, the deputation also urged that the National Gallery and British Museum should be brought, with the South Kensington Museum, under one management, so that the collections, or part of them, within those buildings might be made available, by loan or otherwise, for the use of the different localities.

Mr. Jesse Collings, M. P., in introducing the deputation, said about 40 towns were represented. The movement represented by the deputation was not a new one. It had grown out of a feeling that if our centres of industry were to hold their manufacturing supremacy attention must be given to the means by which the workmen were advanced in their various trades. This country had the finest workmen in the world and very little was done by the State for their cultivation. In fact, it might be said that less was done in this country than was done in most countries to keep the workmen posted in the advances of their trades. That this was a national question was to be easily seen, for if trade suffered in competition with other countries through the inferiority of the workmen, the whole country suffered. The movement commenced in 1877, when deputations from the various towns waited upon the Commissioners of the 1885 Exhibition, the trustees of the British Museum, and the trustees of the National Gallery, to urge the right of provincial towns to participate, by way of loans of objects from the national collections. Very little effect resulted from these deputations, so far as the National Gallery and British Museum were concerned. The provincial towns had a right to participate in the collections at the National Gallery and British Museum—institutions which should be brought under the direct administration of the Government. The towns distinctly desired it to be understood that they did not seek for money grants. They had established and could maintain their museums (some of which were in connexion with free libraries) by their own rates, and Government money would naturally bring Government supervision, from which they desired to be free. He acknowledged, amid cheers, the liberality with which local museums had been aided by South Kensington—a liberality which was constantly increasing, and this, he said, made the towns hunger for some of the hidden treasures, or copies of the hidden treasures, in the British Museum and National Gallery. He enumerated the burdens which the towns had taken upon themselves in providing buildings and objects for the museums and libraries, and he contended that, as these were for the public good, the Treasury should not withhold its hand in giving grants

sufficiently large to enable the South Kensington authorities to increase the aid they gave to the local museums. He added that the aid thus asked, if given, would be a vast educational benefit, an aid to the industrial progress of the population, and, besides, of benefit to the people in pressing on their social progress.

The purposes thus set forth were supported by Sir James Picton, of Liverpool; Sir E. J. Reed, M. P. for Cardiff; Mr. Gripper, Ex-Mayor of Nottingham (who testified to the high value of the local museum in aiding excellence in the lace trade); and Dr. Webster, of Aberdeen.

INTEREST TAKEN BY THE GOVERNMENT IN THE PROMOTION OF INDUSTRIAL ART.

Lord Spencer, in reply, assured the deputation that he had heard with the deepest interest the statements they had laid before him, and he regarded the deputation as one of no ordinary importance. He assured the representatives of the various towns then before him that he should consider with the utmost possible care all that had been said, and what he had heard had increased his desire, which had always been very sincere, to assist in the promotion of industrial art throughout the Kingdom. (Cheers.) With regard to the pressure which had been brought to have all the collections—the National Gallery and British Museum, as well as the South Kensington Museum—placed under one management, this subject, one of great importance, and in which keen interest was felt throughout the country, had been a subject of consideration by certain Commissions, which had reported upon it; but it would not be expected that he should then make any declaration on the part of the Government. Consideration must of course be given to the views of the managers of the British Museum and National Gallery, but he was fully aware of the importance of the views which had been placed before him that day, and they should not be forgotten hereafter. Though he did not represent the British Museum, it was due to the trustees of that institution to say that they had within the last few years helped to carry out the object of the deputation by sending into the provinces part of their collection of coins, prints, engravings, and zoological specimens.

RELATION OF LARGE CENTRAL MUSEUMS TO LOCAL MUSEUMS.

He rejoiced to hear the terms in which the management of South Kensington had been spoken of. These large central museums in the capital were necessary as models and as feeders to local museums. In every country in Europe there was a large central museum supported by the State, and at Berlin, among other capitals, the greatest efforts were being made with that object. Mr. Collings had spoken of the efforts which has been made in various parts of this country to establish free libraries and museums. It appeared that nearly £1,000,000 had been spent on buildings with this object, and £106,000 in managing and maintaining these institutions. Thus a strong feeling must exist of the benefits to be derived from the existence of local museums. He thought it was reasonable, also, to continue the policy of model central institutions of a like character in the ancient capitals of Dublin and Edinburgh, and he attached great importance to the help and the incentive which these central museums gave to others in different parts of the country.

LOAN OF ART COLLECTIONS BY AUTHORITIES OF SOUTH KENSINGTON.

For some years past great interest had been shown at South Kensington in promoting the objects of local museums and art exhibitions by lending objects from the national collection. The following return of pictures and other objects so lent would show the increase which had taken place in the ten years 1871–81:

	No.	Objects, Pictures, &c.
1871. Permanent museums	1	642
Exhibitions, conversaziones &c	12	2,317
Schools of art for study	85	1,563
	98	4,522
1881. Permanent museums	10	2,907
Exhibitions, conversaziones, &c	49	11,020
Schools of art for study	116	3,039
	175	17,026

The assistance which the department rendered was made in two different ways—by circulating objects of the best possible kind among the different local museums, and also by giving reproductions of art-objects. Some objects almost unique, it was impossible to send to different parts of the country.

REPRODUCTION OF ART OBJECTS FOR LOCAL MUSEUMS.

There were other objects of immense value in art on account of their form, color, and beauty, which could be reproduced almost exactly. Accordingly, a movement had been set on foot during the last few years to reproduce this class of objects and lend them for the purposes of art-study to the various local museums, where they were highly appreciated, and the demand for them had greatly increased. Last year was the first on which a vote was taken for this object in the Estimates. The local museum was expected to supply half the cost, and the department did the rest, but in its turn expected to exercise some authority over the choice of the objects; for no art objects should be lent for exhibition unless the models were well chosen and admirable. He was happy to say that the Treasury had agreed to a considerable increase in the vote for the coming year with a view to the further assistance of local museums. The vote of 1882-3 for works of art would contrast as follows with that of the current year :

	1881-2.	1882-3.
Purchases	£8, 000	£10, 000
Local museums	1, 500	1, 500
Reference museums	2, 000	3, 500
Photography	750	1, 000
	£12, 250	£16, 000
		12, 250
Increase		£3, 750

The vote of £10,000 for purchases, showing an increase of £2,000, would much facilitate the assistance which could be given to the local museums, for (deducting of course, such objects as could not be moved without danger) the larger the number of objects at South Kensington, the larger the number available for the provinces. The amount set apart for reproductions would be £3,500, showing an increase of £1,500, and the grant for photography, a most important means of educating art students and others, was increased by £250. Thus, there was a total increase of £3,750 with which to assist local museums in the mode desired by the department. Assistance had also been given to particular localities with art collections, and he attached great importance to this point. Special collections had been sent of ironwork to Sheffield, of china to Worcester, Hanley, and Stoke, and of Japanese lacquer and metal-work to Birmingham. The department had also lately begun a museum of casts from the antique, which was to be historical, and was to extend from the Greek sculptors downwards. This collection would be arranged at South Kensington in such a way as to enable the department to aid those local museums and schools of art which desired replicas. In this way he hoped that much would be done to aid in the spread of art education and advance the object which the deputation had at heart. The Treasury were the masters of the department in their control of the purse, but they had, as he had shown, assented to an increased vote for the coming financial year, and this was of good augury for the future. (Cheers.)

Mr. Mundella, in the course of a short speech, said that in pressing him on this subject they were "flogging a willing horse," and while he maintained that it was necessary to uphold central collections in the capital, he said that the department would be unsparing in its efforts to make the local museums of the utmost possible benefit to the population surrounding them.

IX.

ENGLAND'S DEBT TO SIR HENRY COLE.

[From the London Times.]

By the death of Sir Henry Cole, which occurred, after a short illness, on Tuesday evening, the country has lost a man whose name will occupy a prominent place in the history of art and industry and letters during the present reign. Wherever the influence of South Kensington has penetrated, wherever the movement has been felt which, during the present generation, has brought the attractions and

influences of art to bear on the life and industry of the country, the name of Henry Cole will long be remembered and held in honor. His action has often been harshly criticised, his untiring energy and perseverance have frequently made him enemies; his choice of means may, at times, as his critics so often averred, have been less praiseworthy than his ends, but his aim was always a generous one, and his achievements, which are now the inheritance of the public, will constitute no insignificant claim to its gratitude. Great national movements, like that which has produced the South Kensington Museum and all that it represents in the social life of our time are, no doubt, due to causes deeper and more universal than the energy of any individual. But the instinct is nevertheless sound in the main which identifies South Kensington with Sir Henry Cole as its creator and chief representative. He was among the first to discern and insist upon the paramount need for the organization of national art, and the development of its relations to the national industry. He was the leading spirit and prime mover of the impulse which, beginning with the exhibition of 1851 and earlier, has since produced such abundant results. We need only to reflect on the contrast between the present condition of national taste and that which prevailed not merely in the region of art itself, but in all the departments of technical industry in 1851, in order to form an estimate of the vast influence exercised by Sir Henry Cole. For certainly to him, as much as to any single man, the result is due; and it is only just to give the credit of the achievement to him who long had to bear all the discredit and obloquy of the original endeavor. When South Kensington was in disfavor, both with Parliament and with the public, no one ever hesitated to throw the weight of blame on the devoted head of "Cole, C. B." Now that it has taken its place among the most popular institutions of the country, now that its beneficial influence is universally acknowledged, now that the reproach that England was far behind other nations in the attention it bestowed on art and design has long been wiped out, now that the Museum of Science and Art bids fair to outstrip its most celebrated rivals in other lands and is regarded, more or less, as a model by all, especially now when the prime mover in all this progress has passed away from our midst, it is only right freely and fully to acknowledge the debt which the art and industry of England owe to Sir Henry Cole.

APPENDIX T.

PAPERS RELATING TO ELEMENTARY TECHNICAL TRAINING.

- I. Introduction.
- II. (a) Manual Element in Education, by Professor John D. Runkle, LL.D.
 - (b) The Imperial Technical School in Moscow.
 - (c) The Royal Mechanic Art School in Komotau, Bohemia.
- III. European Technical and Industrial Schools, by Professor John D. Runkle, LL.D.
- IV. Industrial Design as applied to Manufactures, by Mr. Charles Kastner, Director of the Lowell School of Design, Massachusetts Institute of Technology.

APPENDIX T.

PAPERS RELATING TO ELEMENTARY TECHNICAL TRAINING.

I.

INTRODUCTION.

In a paper upon "The value of common school education to common labor," by the late Edward Jarvis, M. D., of Dorchester, Massachusetts, first published in the Annual Report of the United States Commissioner of Education for 1872; since issued as Circular No. 3, 1879, by the Bureau of Education,—occur some very interesting analyses of the series of actions performed by the laborer in the commonest forms of labor, with illustrations of how the exercise by the working man of observation and reflection while thus employed, tend to the increased efficiency of even the simplest, most mechanical movements.

While it is generally admitted that even so small an amount of school training as enables the scholar to read and write, adds perceptibly to the wage value of the laborer, as was satisfactorily shown by the result of investigations initiated by General John Eaton, United States Commissioner of Education in 1870-'71, and so far as the common school education effects this, it does, thereby, add to the wages of the common laborer, yet this is a very different proposition from the one implied in the article by Dr. Jarvis; which, in effect, claims that the present common school teaching definitely trains the child to that kind of observation and reflection, which he instances as involving the distinction between the ignorant and clumsy, or intelligent and skillful laborer.

It is, on the other hand, stoutly contended, by many, that not only does the public school training fail to develop the kind of quickness of perception, on the use or non use of which Dr. Jarvis founds his distinction between the intelligent workman or the stupid laborer; but, that the direct effect of the methods of teaching which long prevailed in the public schools, is to dull the perceptions of natural phenomena and to stifle that inborn instinct for their investigation so characteristic of early childhood,—by assiduously cultivating the memory to the neglect of the observing faculties; thereby substituting for a knowledge of things a knowledge of words merely. The recent and then somewhat novel educational movements chronicled in the early pages of this Report, namely the establishment of public Kindergarten, the introduction of industrial art Drawing in the public schools, the experiments looking to the introduction of "Manual training" in the schools, and the establishment of technical mechanical schools, are all in the nature of a vigorous protest against the benumbing effect of the traditional methods of education in vogue in the common schools; which, it is claimed, tend only to a one-sided development and wholly ignore the productive, mechanical, industrial faculties of the child.

If, however, this view be accepted, the paper by Dr. Jarvis will still

be found serviceable, since it contains, as in an armory, a collection of striking demonstrations each of which is of value to the promoters of the new methods in education; for, by its careful analysis of the movements best fitted for the most effective action in a given industrial operation, there is demonstrated the feasibility of making those movements the subjects of definite training, while there is no need to controvert the premise of the author that common school education already does this, to some extent, since he would doubtless, readily assent to the proposition, that however well it might do it by developing the general intelligence of the child; still unquestionably, definite training based on his exhaustive and scientific analysis, would do it more systematically and thoroughly, and, therefore, more effectively.

Now this is just what the new methods known respectively as "Manual training" and "The Technical Mechanical Education," undertake to do. The mechanical operations are analyzed, the best way of applying the requisite force to produce the desired effect is ascertained and then definitely and logically taught, in a series of progressive lessons in which theory and practice are deftly welded together in one consistent whole; the teacher first explaining the work to be done, process by process, and then, himself, doing the work, step by step, in the presence of the watchful pupils; who each immediately proceed to do the same work for themselves, working under his direct supervision.

This method of the practical training of classes in the workshop, follows closely the similar processes of analysis and construction adopted in the progressive courses of industrial art drawing, as taught in the public schools; and gives like promise of effecting equally definite and satisfactory results when undertaken with favorable surroundings.

The following paper, by Professor Runkle, Ex-President of the Massachusetts Institute of Technology, opens with a philosophic consideration of the subject of manual training and technical industrial education, as adapted to the American system of public education. This is followed by a detailed description of the schools and methods of the two best known European Institutions of this class, namely: The Imperial Technical School in Moscow, Russia, and The Royal Mechanic Art School in Komotau, Bohemia. The school at Moscow, which is believed to have been the first school in the world to formulate this kind of instruction, is the model for similar schools in the United States. The methods of this school were adopted by the Royal School in Komotau, Bohemia.

II. (a)

THE MANUAL ELEMENT IN EDUCATION.*

[By Professor John D. Runkle, LL.D.]

* * * * *

It is hardly worth while in this connection to consider the way that this element is to find its place in our educational system. Individual opinion may for a time have some influence in directing the current of thought upon this subject; but in the end the needs of the public will control. There is already a wide-felt impression, if not conviction, that something of the kind is necessary; and this conviction is most likely to find expression at first in special mechanic art schools, in

* See Appendix A, 45th Annual Report of Massachusetts Board of Education, for 1880-'81, pages 131-145.

centres where the need is most felt. If these schools shall demonstrate their value, not only as training schools for fitting students to enter upon certain lines of industrial activity, but also as schools for furnishing the needed mental discipline, then it seems reasonable to suppose that this element will become more general, and just in proportion to the value in which it is held by the educated and thinking public. The methods of teaching the manual element will become better settled through a larger experience; and there will not be the present lack of teachers properly trained for this kind of education.

The revolution in the method of teaching the physical and natural sciences now practically completed in the laboratory method, or the method of investigation as it may properly be called, is recognized, not only as best for the acquisition of the required knowledge, but also as best for the discipline it imparts; and in the same way the laboratory method of teaching the mechanic arts will gradually take its place as a practical, and at the same time a disciplinary, element in education.

DRAWING RECOGNIZED AS A REQUISITE STUDY IN ALL ELEMENTARY EDUCATION.

It is but a few years since the idea of introducing drawing into our schools as an element of general education seemed visionary; and yet to-day it is an accomplished fact in many parts of our own country, and has been for a much longer time in many countries abroad. Drawing is now regarded by many educators as an established factor in elementary education, and destined to work its way into all classes of public schools. It was only after it was plainly seen that there is a wide distinction to be made between drawing as an art and the drawing which pertains to a specific industry of which the former can be considered only in the light of the most general preparation, that the art began to be regarded as a possible fundamental factor in a common education. Until recently but little attention has been given to the same broad distinction, which underlies all the manual processes. The old idea of "trade-schools"—that is, schools for teaching the technical details of specific industries—has become so fixed in the public mind that some writers on the general subject, and some reports of school committees, have advocated the introduction of trades into the public schools. To all who entertain this idea I earnestly commend a paper on "Technical Training in American Schools," by E. E. White, LL. D., president of Purdue University, Indiana, issued by the Bureau of Education in Washington; and, while I entirely agree with the conclusions of the paper referred to as regards the introduction of trades into our public schools, no matter of what grade, I am further convinced on general grounds, and from some opportunity of observing the working of trade or special industrial schools, in contrast with general mechanic art schools, in which drawing and other mechanic arts enter as a proper factor, that trade-schools can only be justified, if at all, in a few exceptional cases depending upon the character of those to be taught, and in some few instances upon the character of the industry, such as practical farming, horticulture, pomology, or any other industry in which the manual element forms a very inconsiderable part of the special knowledge required, and does not involve those qualities of precision, consecutiveness, and quantitative relation, which would give it special educational value.

WHY TRADES SHOULD ONLY BE TAUGHT IN SPECIAL TECHNICAL TRADE SCHOOLS.

To special schools of this class I shall hereafter refer. The arts are few, and the trades many. It is the province of a fundamental general education to deal with generals, leaving to the student the task of finding out how his general knowledge applies in special cases. In short, he learns the *technique* of his trade after he leaves the school, and enters upon his chosen specialty. But it is quite another thing to leave out of his general education all those elements which underlie all industrial pursuits, and particularly if it can be seen that the introduction of these general elements is not only educationally feasible, but desirable for the roundness and unity of the general education, and valuable, no matter what the future of those so educated may be.

Nor does it follow, as some suppose, that, because the manual element is introduced into a course of study in proportion to its value as an educational factor, therefore all who take the course must necessarily become mechanics, any more than it follows that, because all are taught the art of drawing, all must therefore follow some pursuit in which this art enters as a necessary element. But it does follow that these mechanic art shops or laboratories would be used just as laboratories for the teaching of other arts or sciences are used,—first, to teach the subject as a part of the general education, and, second, for the advanced study of those who wish to become specialists in this particular direction, that is, for general and professional education.

It is often asserted, and I think with truth, that American boys are disinclined, for various reasons, to enter upon industrial pursuits, and especially where a long shop-apprenticeship is required. My experience is that the objection is oftener on the part of the parents, for the reason that the boy's general education must stop, and because, as a rule, it surrounds him with influences which often prove fatal at this critical period of his life. It is also sometimes thought that social considerations influence the boy as well as the parents. But as soon as school authorities, teachers, and the public generally show their respect for labor, by giving it consideration through educational preparation, no caste feeling will enter into the parents' or boy's choice of a future career. He will simply consult his taste and aptitudes, and the opportunities that offer, when he is ready to go to work. The experience in our own School of Mechanic Arts for the past five years fully sustains this position.

VALUE OF GENERAL ELEMENTARY TRAINING IN MANUAL ARTS.

Special technical schools confessedly for the children of the poor would inevitably become caste schools; but a general technical training in some of the manual arts, including drawing, required of all during the proper period, occupying only a few hours per week, say from the age of twelve to sixteen, and before the student has sufficient mental maturity to work successfully in a science laboratory, would have an entirely opposite effect, and be at the same time an excellent preparation for industrial pursuits or for further study, no matter in what direction; for whatever subject cultivates care, close observation, exactness, patience, and method, must be a valuable training and preparation for all studies and pursuits. But few persons, I apprehend, whose education did not include drawing, have not had occasion to regret it, if on no higher ground than their inability to use the pencil or drawing-pen, for the simplest purposes with any effect or satisfaction.

WHY THE EXAMPLE OF THE RUSSIAN METHOD IS OF VALUE TO AMERICAN EDUCATORS.

Before proceeding to an account of some schools in which the Russian method of mechanic art education is used, I will simply add that the Imperial Technical School of Moscow was the first to show that it is best to teach an art before attempting to apply it; that the mechanic arts can be taught to classes through a graded series of examples by the usual laboratory methods which are used in teaching the sciences. The ideas involved in the system are, first, to entirely separate the *art* from the *trade*,—the *instruction-shops* from the *construction-shops*; second, to teach each art in its own shop; third, to equip eachshop with as many places and sets of tools, and thus accommodate as many pupils as the teacher can instruct at the same time; fourth, to design and graduate the series of samples to be worked out in each shop on educational grounds; and, fifth, to adopt the proper tests for proficiency and progress.

It is indeed true, that after the arts have been learned, the next logical step in a full course is to teach their applications in constructions, either in private works, or as is done in the Moscow school. In such a school, where the curriculum covers six years, and the young engineer is needed in the service immediately upon graduation, and has not the opportunity, for any reason, to learn the details of construction in private works, then the attaching of the works to the school may be justified.

II.(b).

THE IMPERIAL TECHNICAL SCHOOL IN MOSCOW, RUSSIA.

This school is entitled to the leading place in any list of schools giving mechanic art education, on account of the fact that it was the first to put this instruction upon a strictly scientific and educational basis,—first, by separating the laboratories, or instruction-shops, from the manufacturing establishment; and, second, by working out a systematic scheme of instruction in each of the underlying arts.

I. THE ORGANIZATION OF THE SCHOOL.

The old school of Arts and Trades was founded in 1830; and by an imperial decree dated June 1, 1868, this school was re-organized and raised to the rank of the leading polytechnic schools of Europe. The course of instruction is six years,—three of general studies, and three of higher special studies.

The work of the second three years embraces three sections of students, mechanical engineers, technological engineers, and constructing engineers. There is a

fourth section, called *praticiens*, formed exclusively of those who show exceptional aptitude for practical work, but whose theoretical studies are insufficient to pass them into the engineering sections. They take much fuller shop courses, which they complete in three years.

To be admitted to the school the applicant must present presumptive evidence of qualification, by presenting one of the following certificates:

1. A certificate of the seventh class in a gymnasium, giving classical instruction.
2. A certificate of a completed course in a real-school of the first class.
3. A certificate of a course of study taken in a school of equal rank.

Before being definitely admitted he must pass a test examination in the following subjects:

Russian Language.—Composition on a theme chosen by the professor.

Mathematics.—Arithmetic, algebra, elementary analysis, geometry, and plane trigonometry.

Physics.—A course of general physics.

Drawing.—Freehand and mechanical drawing.

Without the above-named certificates, the applicant must pass an examination embracing all the studies of a real-school of the first class.

The studies of the school combine theory and practice, followed in parallel courses. The extent of the scientific instruction is the same as in the leading polytechnic schools of Europe. The practical studies embrace freehand and mechanical drawing; the art of turning in wood and metals, joinery and pattern-making, fitting, locksmithing, forging, moulding, and casting. For the practical studies, special workshops have been established, furnished with all the pedagogical objects necessary for methodic instruction, which is given by special masters, who demonstrate to the pupils the fundamental principles of hand work in the mechanic arts. The school possesses in addition large manufacturing works, with all the adjuncts of a first-class establishment.

These works employ salaried workmen, and execute orders annually to the amount of a hundred and fifty to two hundred thousand francs. Still the main aim of the works is to furnish students an example of the conditions of industrial work in all its practical details.

II. THE ADMINISTRATION OF THE SCHOOL, ITS EMPLOYEES AND PUPILS.

Serge Barsheff, honorary curator, privy councillor.

Victor Della-Vos, director, actual councillor of state.

The corps of instruction consists of professors, masters, repeaters, numbering..	46
Engineer-in-chief, assistants and foremen	11
Various employees.....	15
	<hr/>
	72
Under officers and soldiers in the employ of the school.....	84
Workmen employed in the workshops, average number	100
	<hr/>
	184
Free boarding students.....	100
Boarding students, paying twelve hundred francs per year.....	200
Day students paying four hundred francs per year.....	282
	<hr/>
Total.....	582

The pedagogical council consists of the following:

Barsheff, Honorary Curator.....	Kossoff.
Della-Vos, President.....	Porshesinsky.
Bashenoff, Secretary.....	Toukovsky.
Kazaouroff.....	Kolley.
Letnikoff.....	Petroff.
Arkipoff.....	Winogradoff.
Orloff.....	Wladmirsky.
Aeschlimann.....	Zeloff.
Lebedeff.....	Runkle.*

* Elected honorary member Sept 11, 1878.

III. THE METHOD OF INSTRUCTION IN THE MECHANIC ARTS.

The following statement is extracted from the account given by Director Della-Vos, of the exhibit of the Moscow school at Philadelphia in 1876, and again substantially the same at the Paris Exposition in 1878 :

"In 1868 the school council considered it indispensable, in order to secure the systematical teaching of elementary practical work, as well as for the more convenient supervision of the pupils while practically employed, to separate entirely the school workshops from the mechanical works in which the orders from private individuals are executed, admitting pupils to the latter only when they have perfectly acquired the principles of practical labor.

"By the separation alone of the school workshops from the mechanical works, the principal aim was, however, far from being attained. It was found necessary to work out such a method of teaching the elementary principles of mechanical art as, firstly, should demand the least possible length of time for their acquirement; secondly, should increase the facility of the supervision of the gradationary employment of the pupils; thirdly, should impart to the study itself of practical work the character of a sound, systematical acquirement of knowledge; and fourthly, and lastly, as should facilitate the demonstration of the progress of every pupil at every stated time. Everybody is well aware that the successful study of any art whatsoever, freehand or linear drawing, music, singing, painting, etc., is only attainable when the first attempts at any of them are strictly subject to the laws of gradation and successiveness, when every student adheres to a definite method or school, surmounting, little by little and by certain degrees, the difficulties to be encountered.

"All those arts, which we have just named possess a method of study which has been well worked out and defined, because, since they have long constituted a part of the education of the well-instructed classes of people, they could not but become subject to scientific analysis, could not but become the objects of investigation, with a view of defining those conditions which might render the study of them as easy and regulated as possible.

"If we except the attempts made in France in the year 1867 by the celebrated and learned mechanical engineer, A. Cler, to form a collection of models for the practical study of the principal methods of forging and welding iron and steel, as well as the chief parts of joiners' work, and this with a purely demonstrative aim,—no one, as far as we are aware, has hitherto been actively engaged in the working out of this question in its application to the study of hand labor in workshops. To the Imperial Technical School belongs the initiative in the introduction of a systematical method of teaching the arts of turning, carpentering, fitting, and forging.

"To the knowledge and experience in these specialties of the gentlemen intrusted with the management of the school workshops, and to their warm sympathy in the matter of practical education, we are indebted for the drawing-up of the programme of systematical instruction in the mechanical arts, its introduction in the year 1868 into the workshops, and also for the preparation of the necessary auxiliaries to study. In the year 1870, at the exhibition of manufactures at St. Petersburg, the school exhibited its methods of teaching mechanical arts, and from that time they have been introduced into all the technical schools of Russia.

"And now (1878) we present our system of instruction, not as a project, but as an accomplished fact, confirmed by the long experience of ten years of success in its results."

IV. THE SCHOOL WORKSHOPS.

(1) *Wood-Turning*.—Course I. For instruction in wood-turning, thirteen samples or models. Course II. Patterns of details and machines, thirty models.

(2) *Joinery*.—A course of twenty-five models for instruction in joinery and pattern-making.

(3) *Forging*.—Models (seventy-nine) for teaching the manipulation.

(4) *Metal-Turning*.—First course, thirty-eight samples or models. Second course, twenty-one models.

(5) *Fitting*.—Course I. Time for study, two hundred and forty hours on twenty-eight models. Course II. Time for study, two hundred and forty hours on twenty-three models. Course III. Time for study, two hundred and forty hours on twenty-four models. This shop is also fitted with benches, instruments, and apparatus for marking and lining the parts of machines to be worked.

(6) *Models for the Practical Study of the Construction of Cutting Instruments*.—I. Fourteen models of drills and countersinks increased to six times the ordinary size. II. Eight models of the cutting parts of files increased to twenty-four times the ordinary size. III. Ten models of screw-cutting tools increased to six times the ordinary size.

The importance of these models for teaching the theory of these tools is obvious. It will be noticed that the course in fitting contains seventy-five models and seven hundred and twenty hours. It is found that one student cannot work the whole series in the given time, and the following system is adopted for the engineering students: Each student works one-third of the models, but he is held responsible for the remaining two-thirds by studying the work of the two who are on his right and left. When either of the three receives instruction, the other two must attend. In this way all are held responsible for the manner of working and the method of solution of each piece.

The student in the section of *praticiens*, on the other hand, must each work out the entire series.

With this account of one of the most thoroughly equipped and comprehensive schools for mechanic art and mechanical engineering education in the world, I pass to the

II. (c)

ROYAL MECHANIC ART SCHOOL, IN KOMOTAU, BOHEMIA.

This school opened October 26, 1874, under the direction of Professor Theodore Reuter, who, after an inspection of the various methods of shop instruction in use in Europe, adopted that of the Moscow school, giving credit to Director Della-Vos. No manufacturing works are connected with the school. Its simple aim is to educate skilled mechanics in the best and quickest way, and with such theoretical knowledge as the mechanic needs in addition to manual skill. The front portion of the school-building, only half of which is shown in the cut, is used for the theoretical instruction, and the three portions extending at right angles in the rear contain the shops. These were at first equipped for forty-eight students; but additional facilities have been furnished from time to time to meet the increasing number of students. The minimum age for admission is fourteen years; but all ages up to twenty-six years are found in the school. The course is two years, and the student is occupied nine hours per day,—from eight to twelve M. in the study and drawing rooms, and from one to six P. M. in the shops. The shop-work holds the first consideration, as the quality of this work is the test by which the public is to determine the value of the practical instruction. The theoretical subjects and the methods of teaching them are determined solely by the student's needs as a skilled mechanic. The following is the course of study:

A TWO YEAR'S COURSE OF STUDY AND SHOP-WORK.

First Year's Course of Shop-Work.—1. Carpentry and joinery, thirty hours per week for sixteen weeks. 2. Wood-turning, thirty hours per week for twelve weeks. 3. Hand-tool work in metals, thirty hours per week for twelve weeks. In this course the typical forms in locksmithery are used as models, preparatory to a course in application during the second year. The student changes his shop-work every four weeks.

First Year's Course of Theoretical Studies.—1. Linear drawing and the elements of projections, ten hours per week. 2. Free hand drawing, four hours per week. 3. Round-hand writing, one hour per week, winter term. 4. Arithmetic, five hours per week in winter, and two hours in summer. 5. Geometry, three hours per week in summer. 6. Physics, one hour per week. 7. Machine theory, two hours per week. 8. Simple book-keeping and business-papers. In all of these subjects only the simplest elements are taught in a plain and thorough way.

Second Year's Course of Shop-Work.—1. Forging, thirty hours per week for eight weeks, two hundred and forty hours. 2. Foundry-work, thirty hours per week for eight weeks. 3. Iron-turning, thirty hours per week for twelve weeks. 4. Locksmithery, an applied course of thirty hours per week of twelve weeks.

Besides the prescribed work in this course, each industrious student can make one or more complete machines. This little drilling-machine is not given as a fair specimen, but because I happened to have a photograph of it. In this extra work he has only the direction, suggestions, and advice of his teachers, in order to cultivate as early as possible his independence in design and execution.

Second Year's Course of Theoretical Studies.—1. Machine-drawing ten hours per week. 2. Free hand drawing, four hours per week. 3. Arithmetic, two hours per week. 4. Stereotomy, one hour per week. 5. Applications of arithmetic and geometry to simple machine computations, three hours per week. 6. The manipulation and manufacture of metals, one hour per week. 7. Machine theory, two hours per week. 8. Book-keeping and business-papers.

In all the shops the instruction is given through a progressive series of models,

all of which each student must work; nor can he take a new one till the previous one is satisfactorily made. Any student who, through greater industry or capacity, finishes the course in advance of the class, can choose his work, with the sanction of his teacher, till the course is completed; but he cannot enter a new shop in advance of his class.

As all the materials are furnished by the school, it claims all the work. Each student has a case, with his name attached, in which his work is placed. All pieces of marked excellence are put into the collection for general and annual exhibitions in the name of the student. All the work is kept for two years and then sold to schools and individuals for the purposes of instruction.

RISE OF A CLASS OF TRAINED TEACHERS OF THE MECHANIC ART SCHOOLS.

There is a small but growing class of men abroad called *Technikers*. They do not claim to be, or rank with, engineers, but are simply skilled and well-educated mechanics; and these men are finding situations as teachers in such schools as that at Komotau. They are qualified to give instruction in both the theoretical and practical departments, and are likely to be much better teachers of shop-work than the mechanic who has only his shop experience. While there is not an excess of such men abroad, here they are difficult to find.

This school was established two years before our Mechanic Art School at the Institute of Technology, but I did not know of it till near the close of our first year. The fact that both schools had independently adopted the same method of shop instruction, drawn from the same source, made my two days' visit in Komotau of peculiar interest. At the time of my visit the school was in charge of Professor Röver, from whom I received the kindest attention, Professor Reuter having been called to Iserlohn in Prussia, to found another school. Through the director of the Komotau school I had the pleasure of meeting Professor Hauff of the polytechnic School of Vienna, who is the chairman of a commission having in charge the matter of intermediate industrial education in Austria. It is proposed to establish special schools in all industrial centres throughout the empire, having precisely the same aims as that at Komotau, and conducted upon the same principles and by the same methods, but varied and adapted to the industry of the particular locality, the theoretical studies conforming to the needs of the particular industry. I was informed that the aim and end of these schools is to be instruction, and only when the manufacture of certain things can be taught in an applied course more successfully than ideal or purely educational models, will it be done; the principle having already been settled that these schools were in no sense to become or to be regarded as commercial manufacturing establishments. The department of commerce has also established a practical technical school at Steyr, with workshops to teach all the processes in the working of iron and steel,—such as forging, turning, chipping, filing, boring, scraping, polishing, burnishing, soldering, tempering, annealing, gilding, silvering, nickeling, engraving, etching, coloring, staining, etc., including applications to wood, bone, horn, and ivory. In connection with the programme of the school we find the following remarks :

PRACTICAL VALUE OF THESE SCHOOLS.

“It is now beyond question, that the required education, together with the arts belonging to the several trades, can only be gained in special schools with workshops fitted up in the proper way. These workshops also make it possible for large numbers to fit themselves for the various technical trades, without having to travel the unpleasant path which leads through the years of apprenticeship, and at the same time to acquire the proper education. While the shops here relate to the manufacture of small articles in iron and steel, those at Komotau and Klagenfurt pay particular attention to the education of foremen and workmen in machine manufacturing and those at Ferlach to gun-making.

“Just as the last-named school has proved that it is possible in a few years to revive an almost dead industry, and make workmen capable of paying taxes out of despairing mechanics, so the school at Komotau has shown the most brilliant proofs of usefulness, and the ends there gained have been acknowledged at home and abroad. One proof is, that, in spite of the hard times, all the pupils from Komotau have found occupation in different manufacturing establishments; and another, that England, a country unsurpassed in the manufactures of iron and steel, has already sent some students to the school.”

From the Abstract of the Proceedings of the Society of Arts for the Nineteenth Year, 1880-1881, a pamphlet of 114 pages published

by the Massachusetts Institute of Technology, the following abstract of the report made by Professor Runkle of his tour of observation among the European technical and trade schools; with the discussion that followed, is taken, as containing much of interest.

III.

TECHNICAL AND INDUSTRIAL EDUCATION ABROAD.

By Professor JOHN D. RUNKLE, LL. D.

The 268th meeting of the Society of Arts was held on Thursday, April 14, 1881, at 7.30 p. m., Mr. H. Weld Fuller in the chair.

After the appointment of a nominating committee, the chairman introduced Prof. J. D. Runkle, who made some observation on Technical and Industrial Education Abroad.

Prof. Runkle proceeded to consider somewhat in detail the characteristics of the various technical and trade schools. He referred to the exhibits of several schools, particularly those of Moscow and St. Petersburg at Paris in 1878. He described the fine buildings of the comparatively-recent technical schools, especially those at Brunswick and at Dresden, showing plans and explaining the admirable arrangement, and the perfect systems of ventilation used, more particularly in the chemical laboratories.

The school at Karlsruhe, the oldest in Germany, is still noted for the standing of its department of mechanical engineering.

The polytechnic school in Berlin occupies an old building, not particularly well adapted to its work. There are, however, two matters in this school which deserve very special notice. The first is its laboratory for testing not only strength of materials, particularly the metals, but the changes these metals undergo when subjected to repeated applications of the same force, either transverse or tensional. The main laboratory contains the great hydraulic machine for testing the resistance to the tension and crushing, and studying the elasticity of the metals, including their ultimate strength. Two other rooms are devoted to the study of the molecular changes which a body undergoes when subjected to an indefinite but very large number of applications of the same force, each being far below the elastic limit of the body tested. In one room the machinery is arranged for applying a transverse force, and in the other for applying a tensional force. This machinery which runs night and day, week after week, and month after month, registers the number of applications of the force.

Another matter of marked interest in this school is its museum of models for illustrating the mechanical motions.

In Berlin is Helmholtz's new physical laboratory. It is admirably arranged for investigation, but only accommodates a few advanced students. I do not think it surpasses the new physical laboratory at Oxford, England. Both have the same aims. As a teaching laboratory for the general student, there is nothing in Europe to-day which at all compares with that at the Institute, either in the method of instruction or in the capacity to accommodate large numbers of students. The large and important school at Munich, with its 1,000 or 1,200 students, occupies a new and admirable building, possessing the same plan and adaptation as those already passed in review. The Liebig chemical laboratory of the Academy of Sciences occupies a separate building, and accommodates a large number of students. It ranks among the best in Germany.

The polytechnic at Vienna is particularly noteworthy for its industrial museum.

Prof. Runkle referred to the much larger teaching force employed in these schools as compared with ours, and the consequences arising from this fact.

There is also a marked contrast in the methods of instruction. In the foreign schools all the instruction is given by lectures, and the professor, as a rule, takes no means to learn whether his students understand the subject or not. They are expected to take sufficiently full notes during the lecture to be able afterwards to write it out fully.

WHY THE AMERICAN STUDENT IN MECHANIC ARTS HAD BEST STUDY IN THE UNITED STATES.

Another strong contrast between these schools and those at home is in the freedom of the student in the choice of studies. I am often asked whether I would advise a young man to take his undergraduate professional course in a German

rather than in an American polytechnic school. I say decidedly, no, for two reasons. It is undoubtedly better for the student to lay the solid foundation of his professional knowledge in the country where he will practice it. It is true that the purely scientific knowledge is the same, but the details in application, methods in practice, and economic conditions are not the same; and it is important that the student should not be obliged in any sense to change his point of view as he enters upon his professional career. In the second place, the student is in a strange land, and free from all the social and educational restraints of his home life; and the fact is that too many cannot bear the change.

THE TRADE SCHOOL OF STUTTGART.

But we must now leave the polytechnic schools to consider briefly a few of those of lower grade. And first, the Baugewerke, or trade-school of Stuttgart. It occupies one of the finest buildings in the city, and compares favorably with that of the polytechnic school. Its object is to furnish such instruction as is needed by workmen and foremen in the various trades which apply, particularly in architecture, in agricultural engineering, in the construction and superintendence of water works, and in machine construction. Most of the students are either workmen in these various trades or propose to become apprentices. The school does not furnish any opportunities for manual instruction. There is a body of about 40 teachers, and a variable, but often large, number of students. The instruction is given in half-yearly courses, so those who are at work in one portion of the year can get the instruction in the other. Usually, the instruction in winter is given to three or four parallel sections, while the fewer pupils in summer require only one or two sections, according to the subject. Some subjects are only given in one term of each year. Instruction is given from eight in the morning till eight in the evening, with a recess from 12 to 1 o'clock. Very many of the students get most of their instruction in the evening, their days being devoted to work.

The preparatory course for those needing it is, for the first class, German, 6 hours per week; French, 4 hours; history and geography, 4 hours; writing, 6 hours; arithmetic, 6 hours; geometry, 6 hours; free hand drawing, 6 hours; geometrical drawing, 6 hours; in all, 44 hours per week: for the second class, German, 6 hours; French, 4½ hours; writing, 3 hours; algebra, 8 hours; geometry and stereotomy, 8 hours; ornament drawing, 6 hours; architectural drawing, 8 hours; in all, 43½ hours per week. It takes a student one year to complete this course. I must refer you to the large study-plan on the wall for further details. There is one additional point which I think will interest you. At a certain time in the spring of each year an order is issued by the war department of the German government that all young men born on and after a given date must present themselves for examination for military service. All who are found physically qualified must serve three years, unless they are prepared to pass an examination in a given course of study, in which case they serve only one year. This school prepares students for this examination by the following course: German, 8 hours per week; French, 10 hours; history, 8 hours; physical and political geography, 6 hours; mathematical geography, 2 hours; arithmetic and algebra, review and practice, 4 hours; geometry and stereotomy, review and practice, 4 hours; in all, 42 hours per week for the summer term of each year. This school is held in high regard by the citizens of Stuttgart, and is said to be the only one in Germany doing this particular work. How much more would it cost the city of Boston to establish and maintain such a school than it now asks for the free evening schools?

THE FREIBURG MINING SCHOOL.

The buildings of the Freiburg Mining School are filled with varied and most valuable collections, especially those of geology, mineralogy, and the models illustrative of mining operations and machinery, as might properly be expected. Besides the courses of instruction given at the academy, the students have the opportunity for practical work and application in the mines, and in the reduction and metallurgical works in the vicinity. The school has no laboratories for experimental work on a tolerably large scale, such as we possess; and I am not sure that the opportunities for practical work at Freiburg fully answer the same ends. On the other hand, I am satisfied that the student who first takes a practical course of ore-reduction and smelting in our laboratories will be all the better prepared to profit by actual work in the mines and metallurgical works; and I here repeat and emphasize what I have said before to-night, that the student had better take his professional course at home, and then go abroad if he has the time and means; and this I think particularly true of the mining courses.

WHY PROFESSOR RUNKLE TOOK SPECIAL INTEREST IN THE SCHOOL AT KOMOTAU.

Before visiting the school at Komotau, in Bohemia, which is known there as the Mechanical Technical Instruction Workshops of the Royal Ministry of Commerce, implying that it is a government school in charge of the ministers of commerce, will you allow me to state a fact which made this school to me of uncommon interest. After our plan had been worked out, and the instruction in the shops had been given about one year, I received from a friend in Cincinnati the programme of the Komotau schools. Judge of my surprise and pleasure to find a school based on the same plan, and the practical instruction carried out in substantially the same way, and credit given to Director Victor Della-Voss of the polytechnic school of Moscow.

PURPOSE OF KOMOTAU SCHOOL.

The simple aim of the school is to educate skilled mechanics in the best and quickest way, and with such theoretical knowledge as the mechanic needs in addition to manual skill. The plan of the building before you was kindly furnished me by the director of the school. The front portion is used for the theoretical instruction, and the three portions extending at right angles in the rear contain the shops. These were at first equipped for forty-eight students, but additional facilities have been furnished from time to time to meet the increasing number of students. The minimum age for admission is 14 years, but all ages up to 26 are found in the school. The course is two years, and the student is occupied nine hours per day, from 8 a. m. to 12 m., in the study and drawing rooms, and from 1 to 6 p. m., in the shops. The shop-work holds the first consideration, as the quality of this work is the test by which the public is to determine the value of the schools. The theoretical subjects, and the methods of teaching them, are determined solely by the student's needs as a skilled mechanic. Let us now briefly examine the course of study. First year's course of shop-work: 1. Carpentry and joinery, 30 hours per week for 16 weeks. 2. Wood-turning, 30 hours per week for 12 weeks. 3. Hand-tool work in metals, 30 hours per week for 12 weeks. In this course the typical forms in lock-smithery are used as models, preparatory to a course in application during the second year. The student changes his shop-work every four weeks.

First year's course of theoretical studies: 1. Linear drawing, and the elements of projections, 10 hours per week. 2. Free-hand drawing, 4 hours per week. 3. Round-hand writing, 1 hour per week, winter term. 4. Arithmetic, 5 hours per week in winter, and 2 hours in summer. 5. Geometry, 3 hours per week in summer. 6. Physics, 1 hour per week. 7. Machine theory, 2 hours per week. 8. Simple book-keeping and business papers. In all of these subjects only the simplest elements are taught, in a plain and thorough way. Second year's course of shop-work: 1. Forging, 30 hours per week for 8 weeks, 240 hours. 2. Foundry work, 30 hours per week for 8 weeks. 3. Iron turning, 30 hours per week for 12 weeks. 4. Machine lock-smithery, an applied course of 30 hours per week of 12 weeks.

Besides the prescribed work in this course, each industrious student can make one or more complete machines. In this extra work he has only the direction, suggestions, and advice of his teachers, in order to cultivate as early as possible his independence in design and execution. Second year's course of theoretical studies: 1. Machine drawing, 10 hours per week. 2. Free-hand, 4 hours per week. 3. Arithmetic, 2 hours per week. 4. Stereotomy, 1 hour per week. 5. Applications of arithmetic and geometry to simple machine computations, 3 hours per week. 6. The manipulation and manufacture of metals, 1 hour per week. 7. Machine theory, 2 hours per week. 8. Book-keeping and business-papers.

In all the shops the instruction is given through a progressive series of models, all of which each student must work, nor can he take a new one till the previous one is satisfactorily made. Any student who, through greater industry or capacity, finishes the course in advance of the class can choose his work, with the sanction of his teacher, till the course is completed, but he cannot enter a new shop in advance of his class.

As all the materials are furnished by the school, it claims all the work. Each student has a case with his name attached, in which his work is placed. All pieces of marked excellence are put into the collection for general and annual exhibitions, in the name of the student. All the work is kept for two years, and then sold to schools and individuals for the purposes of instruction.

TRAINED TEACHERS OF TECHNICAL INDUSTRY.

There is a small, but growing, class of men abroad called Technicians. They do not claim to be, or rank with, engineers, but are simply skilled and well-educated mechanics, and these men are finding positions as teachers in such schools as that

at Komotau. They are qualified to give instruction in both departments, and are likely to be much better teachers of shop-work than the mechanic who has only his shop experience. While there is not an excess of such men abroad, here they are difficult to find. If we could meet the demand which already exists, this kind of education would make rapid strides in this country.

THE KOMOTAU SCHOOL A MODEL FOR THE AUSTRIAN SCHOOLS.

Through the director of the Komotau school, I had the pleasure of meeting Professor Hauff, of the polytechnic school of Vienna, who is the chairman of a commission having in charge the matter of intermediate industrial education in Austria. It is proposed to establish special schools in all industrious centres throughout the empire, having precisely the same aims as that at Komotau, and conducted upon the same principles, and by the same methods, but varied and adapted to the industry of the particular locality, the theoretical studies conforming to the needs of the particular industry. I was informed that the aim and end of these schools is to be instruction; and only when the manufacture of certain things can be taught in an applied course more successfully than by the making of ideal or purely educational models will it be done; the principle having already been settled that these schools were in no sense to become or to be regarded as commercial manufacturing establishments.

TECHNICAL SCHOOL FOR IRON WORKERS, IN STEYER, AUSTRIA.

The department of commerce has also established a practical technical school at Steyer, with work-shops to teach all the processes in the working of iron and steel, such as forging, turning, chipping, filing, boring, scraping, polishing, burnishing, soldering, tempering, annealing, gilding, silvering, nickeling, engraving, etching, coloring, staining, etc., including applications to wood, bone, horn, and ivory. In connection with the programme of the school, we find the following remarks:

"It is now beyond question that the required education, together with the arts belonging to the several trades, can only be gained in special schools with work-shops fitted up in the proper way. These work-shops also make it possible for large numbers to fit themselves for the various technical trades, without having to travel the unpleasant path which leads through the years of apprenticeships, and at the same time to acquire the proper education. While the shops here relate to the manufacture of small articles in iron and steel, those at Komotau and Klagenfurt pay particular attention to the education of foremen and workmen in machine manufacturing, and those at Ferlach, to gun-making.

"Just as the last-named school has proved that it is possible in a few years to revive an almost dead industry, and make workmen capable of paying taxes out of despairing mechanics, so the school at Komotau has shown the most brilliant proofs of usefulness, and the ends there gained have been acknowledged at home and abroad. One proof is that, in spite of the hard times, all the pupils from Komotau have found occupation in different manufacturing establishments; and another, that England, a country unsurpassed in the manufactures of iron and steel, has already sent some students to the school.

"The organization of this school was acknowledged so excellent by English mechanical engineers, who were sent to make the examination, that one of the most famous iron manufacturers has expressed his approbation by sending his own son, and a member of another wealthy family, to study there. We believe that such facts prove conclusively the value of work-shop instruction; and if the school here is properly supported, manufacturers will soon be able to defy competition."

In conclusion, I venture to predict that if Austria shall persist in carrying out the educational plan upon which she has entered, it will not be many years before she will take high rank among the leading industrial nations of the world; and I earnestly commend the example set by Austria to the people and government of the United States.

PRACTICAL ADVANTAGE TO THE PUPILS.

Dr. Blake then inquired whether the industrial education given at Komotau, Bohemia, described in the address, was of such a character that it made the pupil self-supporting on leaving school, or whether it was only elementary.

Prof. Runkle stated in reply that, on graduating from the school at Komotau, the pupil was able to find employment in a machine shop, and begin to earn enough to support himself; that these graduates are not skilled mechanics when they leave the school any more than a graduate of the Institute of Technology is an engineer.

The course at Komotau is two years, and in that time the pupils acquire so much practical knowledge that there are few mechanics who can do such a variety of work; but in the application of this knowledge in manufacturing, they have not, of course, the skill of experienced mechanics who began with the same training and preparation.

WHAT IS THE BEST TECHNICAL TRAINING FOR AMERICAN SCHOOL BOYS?

Dr. Blake then asked Professor Runkle whether he considered the system followed at Komotau and at the Institute of Technology better adapted to our needs, here in Boston, than a system of trade schools by which each pupil should receive such instruction as would enable him to leave school a finished workman in some trade. He said that the problem to be solved by the school committee of the city of Boston was, which is the plan which will best fit the boys for work; and that whatever plan was adopted, it would be necessary to demonstrate its advantage to the public in some simple way, and to be able to show results to the public within a year or two. Now the question is, under these circumstances, which is the best plan to begin with?

Professor Runkle in reply said he was decidedly of the opinion that such a study of practical processes as is pursued at the Komotau school or at the Institute of Technology is all that can be advantageously covered by any school. Give the boy a thorough drill in general principles and processes, and, in a part of his course, such applications as he has the time and ability to make. To establish in addition a large machine shop to teach the applications in special trades would involve a large expense, and be a great waste of money. Moreover, the time has come when we shall be obliged to teach the boys what they wish to practice, and this can only be done by general methods. We have got to educate mechanics, or lay the proper foundation, or else go without. To make this education the most appropriate, we must, in connection with the shop instruction, give the pupil such mental instruction as will be most suitable to fit him for these special industries. The shop courses form the true key to a technical education.

Dr. H. P. Bowditch having inquired at what age boys can advantageously receive this kind of instruction, Professor Runkle replied that they can advantageously begin at fourteen, although the Komotau school contains pupils of all ages, from fourteen to twenty-six.

Dr. Blake said that he was compelled to look at this subject from the comparatively narrow stand-point of a member of the school committee of Boston, having in view the needs of a large number of the graduates of the grammar schools, whose future welfare depended largely upon whether they were taught how to earn an honest living. This, in a measure, compelled him to a particular view of what would be the best plan to adopt under the circumstances, bearing in mind the needs of the community and the practical value of the plan adopted. It is well known that machinery has not yet done away with the teaching of trades, and it is impossible that it will for many years. As we are gradually losing our native mechanics, and will, in time, be compelled to import skilled workmen, it would seem at once desirable, if feasible, that a plan which should replenish our gradually-diminishing class of mechanics should be given a trial, particularly where such a plan had the indorsement of practical men, and the results of the experience of other cities to support it. Such a plan was recommended by the committee on industrial education, in which the intention to teach specific trades was advocated. The assurance that such could be done successfully in two years, and at a cost not greater than it takes for each pupil in the high schools, was pretty clearly demonstrated.

Considering the circumstances of the class to be benefited, and the positiveness of the results obtained, and the undoubted success which would attend such a course, it was recommended at the time as the best to adopt rather than any plan which taught only general principles. Be it remembered that most of the pupils of such a school would average about fourteen years of age on entering, and that very many of them would fail to derive much benefit if the instruction was only of a general or elementary character. In the beginning of an important subject like this of industrial education,—probably the most important of the present day or generation,—very little should be left to chance, or to the individual effort of a boy, to complete his general education by the required opportunity to get the specific education necessary. Time and experience would undoubtedly call for modification and amplification of the subject, and whatever plan was adopted would, in the end, conform to the needs of the community that supported it. The experience of Paris in the maintenance of trade schools, and the complete success in teaching trades and in turning out skilled workmen, whose services were in constant demand,

showed at least that one city had successfully proved the problem of this form of industrial training. Professor Silvanus P. Thompson, in the *Popular Science Monthly* for December, 1880,* gives a very instructive account of the trades school in Paris, which all interested in the subject will read with pleasure. Boston's position seemed somewhat to resemble that of Paris. The plan selected was suited to the local requirements, and, until a comprehensive system was adopted by the State, it would be the best to aim at what was positive and not general in character, and where results would prove the wisdom of not at first attempting to do too much.

WHY SUCH A TECHNICAL SCHOOL IS BETTER THAN A MANUFACTURING SHOP.

Professor Runkle said that at Chalons-sur-Marne they have a large manufacturing shop, and while this plan is very expensive, it is not at all as efficient as that of the Komotau school.

Suppose the city of Boston should build a large machine shop, and undertake to teach a large number of boys. Before these boys could be of any value in the shop, they must be taught to handle some of the tools. Then the question arises as to how we can best instruct them in the use of tools, whether by putting them into the shop and letting them acquire it as best they can, or by putting up laboratories where we can teach to large classes the fundamental processes which they need in practice, and without a knowledge of which the boy is not fit to go into a shop. By this latter plan we can render this instruction much more effectual and far less expensive.

I asked the chairman of the Committee on Industrial Education why did he not put up a large machine shop in connection with the Komotau schools, where these boys could apply their knowledge; and his reply was that in their two years' course the boys learned so much that they could go into machine shops and get employment, and receive pay while learning the applications. The mental training a boy receives in such a school should be well adapted to the needs of the industries he is learning, and he should be made to see that this is the case.

Every boy in the promotion school always makes one or two designs while at the school, making the drawings himself, and going from one shop to another to construct them.

PROFESSOR ORDWAY ON THE KOMOTAU PLAN.

Professor Ordway said such schools do, indeed, teach only the elements, but when the students leave they are able to earn a living. If, on the other hand, we teach them one trade, they are, to a great extent, lame. We should give the boys a liberal education, and not educate them for one trade alone, thus making of a boy a carpenter or a blacksmith, and teaching him nothing else. Instead of this, give them a liberal education and let them find their own place when they go out into the world.

An English gentleman, who was sent to study industrial art education as we carried it on in this country, said that the great difference between an English and a French workman was that, whereas an English workman was trained to make one piece, he had no knowledge of what had been done to the piece before it came into his hands, nor what was done with it afterwards, while the French workman knew all about these things.

Mr. Dresser said the proposition of Professor Runkle was incidental to the course of civilization. In college, boys receive a liberal education, and they subsequently undertake the study of some special calling. Now, every one should be qualified in the best way that he can for the calling he is to take up. The experience of one generation should find some means of being transmitted to those generations that come after. But the great difficulty is that we attempt to do too much. Instead of giving the boys such instruction as we can, it seems to be the desire of the school committee to graduate them as perfect mechanics; but this cannot be done,—firstly, because it is too costly; and secondly, because any such scheme comes in competition with private enterprise; and cold water will at once be thrown on any scheme that comes in competition with private enterprise.

Dr. Blake having referred again to the fact that whatever plan the school committee should adopt would need to show results in a simple way, and in a short time, and to make the boys self-supporting.

Professor Whittaker said the school of mechanic arts at the Institute of Technology has not attempted to give as much instruction in the mechanical arts as the school at Komotau. He inquired of Professor Ordway whether all of its graduates are not now employed, and whether any are to be had to-day without taking them from places where they are at work.

* For this article, reprinted from the *English Contemporary Review* of September, 1880, see pp. 751-760 of this volume.

RESULTS SHOWN BY THE SCHOOL OF MECHANIC ARTS IN INSTITUTE OF TECHNOLOGY.

Professor Ordway said : Of the graduates of the School of Mechanic Arts many have gone into machine shops, and he knew of none who were not now at work, while others are engaged in teaching shop-work. Under the present school system, we have after the grammar school the high school. Now, what are our boys good for when they leave the high school? They are ready to fit for college; hence, by such a system we are furnishing opportunities for a suitable education only to that part of our boys who propose to fit for college, or only one or two per cent of the whole. Let us have manual high schools also, and let each boy choose between the two, and we shall then be giving equal opportunities to all. As a city, on the other hand, we have no business to fit boys for trades. We do not educate lawyers or physicians at the expense of the city, neither should it be required of us to educate for special trades.

Professor Whittaker said that misunderstanding and unnecessary discussion might arise if the term "skilled mechanic" was not defined. A person may properly be called a skilled or an expert mechanic if he is thoroughly acquainted with the processes of some mechanic art, and has acquired great dexterity in the performance of these processes. It seems to be conceded that a liberal knowledge of the principles and processes of an art can best be acquired in a good school, and with a sufficient degree of skill to enable one to secure a good footing in a shop where he can make himself useful and receive compensation; and the point now under discussion seems to be this: should the extreme skill or dexterity of the expert mechanic be acquired in the school or in the actual practice of his art?

Such great skill can only be acquired by a constant repetition of the process, and the question is whether this repetition shall be made in a shop for pay, or in a school at an expense. The division-of-labor system, under which most manufactories are now managed, renders them perhaps the best place that can be conceived of for the acquiring of such dexterity. If from the beginning to the end of the acquiring of this extreme dexterity his labor has a marketable value, the school must be able to do for the student more than the shop can do for him, or nothing can justify the waste of producing power, which in this case must occur in the school. A school can, indeed, vary the work of the learner more frequently than a manufacturer could afford to do, and in this and in other ways the work of the school could be made more interesting and attractive to the average student. On the other hand, it is not always a disadvantage to the student to require him to use continuously the productive powers that he has, even for the one purpose of earning money, before acquiring other productive powers. Under the usual division-of-labor system, those persons who can perform a single process well are as needful to the success of our industries as the more skillful persons who can perform all the processes of an art with great dexterity. Many more of the less skillful people are needed than of the more skillful ones. The skillful help to keep the others usefully employed, and to make them more useful as producing agents, they receive higher wages, and they really earn more than the others; but the skillful and the skill-acquiring persons are both needed in our industries, and it might be a misfortune if the school should prevent young men from turning their services to good account after they have become useful wealth-producers, and after manufacturers are willing to offer them as good opportunities for acquiring dexterity as the best school can. When a person has acquired the extreme dexterity which is essential to the best performance of a single process of some mechanic art, he can produce as much wealth as if he, in addition to practicing the process, had the dexterity to perform some other processes equally well. Should the process in which he is skillful fall out of use through some improvement, or should he lose his place from any cause, he is fortunate if he has had a liberal training in all of the processes of his art, for in that case he can probably soon make himself dexterous in the performance of some other closely related one. Great discretion and good judgment are needed in drawing the line that shall indicate the end of the preparatory and the beginning of the wealth-producing life. The school board must draw it where it will, in their judgment, best serve the public interest; but the individual student must, aided by the wisdom of his advisers, draw it where it seems likely best to serve his personal interests.

Professor Runkle believes that in a few years there will not be a trade school in the world. They will all be given up now that a better system has been found.

Mr. Lowe called attention to the fact that a certain amount of instruction in the mechanic arts would be useful in all departments of life.

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IV.

INDUSTRIAL DESIGN AS APPLIED TO MANUFACTURES.

By Mr. Charles Kastner, Director of the Lowell School of Design, Massachusetts Institute of Technology.

The following brief account of the work of his school was given by Mr. Kastner at the 269th meeting of the Society of Arts, April 28th, 1881:

The chairman then introduced Mr. Charles Kastner of the Institute of Technology. Mr. Kastner said: In coming before you to-day to speak of the work of the Lowell School of Design, of which I am director, I am speaking of something that you all know very well in its practical results, but it is a subject that is worthy of being again and again presented. Incidents are constantly occurring that show how widely the school is known. It supplies a long-felt need; there is an increased demand for designers, and my list of applicants is very large. The interest that manufacturers take in it, the cheerful courtesy with which looms have been presented to the school, the alacrity with which my needs have been supplied when I have hinted that we wanted materials for the weaving room, and samples of all kinds for ideas, all these things speak louder than words could possibly do.

THE LOWELL SCHOOL OF DESIGN SEEKS TO TRAIN AMERICAN DESIGNERS.

The object for which I am constantly laboring is to supply the American manufacturers with native designers, to train up young men and young women to fill the places that, until very recently, were held entirely by English and Frenchmen; the nation needs such a work done; it may be but a "drop in the ocean," but it is something that helps on, as much as one mortal can help, the grand old spirit of a century ago. It is encouraging and aiding home enterprise; it is one of the things, small perhaps in themselves, but all-powerful in the aggregate, helping our country so that she can feel that she has within herself the possibilities of supplying her own needs, and not going abroad for what she ought to have here. I should like to supply our manufactories with designers of taste and skill, so that our fabrics would have not alone intrinsic worth, but also a grace of figure and beauty of tone such as would insure success in home and foreign markets.

Paris has hitherto taken the lead in work of this kind. Their *ateliers de dessin* (designers' workshops), furnish all the novelties, all the graceful, elegant designs that are so eagerly sought after, and the printers and manufacturers either go to those workshops or are in communication with them to obtain new patterns and adapt their fresh ideas to the needs of the different markets.

Whenever we say of a thing, "it is of French manufacture," we think involuntarily of elegance and beauty, as we would in connection with no other name. England is the principal buyer of these French designs, and often has regular contracts with their *ateliers* because of the universally-acknowledged preëminence of their work.

WHY TRAINING OF FRENCH DESIGNERS IS SO SUCCESSFUL.

One reason of this preëminence is that the student is subjected to a severe course of study in drawing directly from natural flowers, or artificial forms of the natural flowers when they can be obtained, and never from flat lines. The latter practice would never be allowed. To do as good work here, the course of study should be as thorough and the student should have constant practice in sketching from nature. I reiterate it again and again, I insist upon it as the very basis of the designer's skill, as the great secret of his success, the ability to reproduce in his pattern the curves of natural flowers, and also their lights and shadows.

It would be a great advance if the time should ever come when simple and artistic patterns in the cheaper as well as the more expensive fabrics would be those that sold the best.

To obtain beautiful patterns it is absolutely necessary that the designer be familiar with natural forms. Grace and elegance lie at the very soul of nature.

Many people who have had only third-rate success in fine art find their place and are well remunerated when they take up industrial art. Indeed their experience in fine art would be of great advantage to them in designing, as it takes a skillful hand.

I beg leave to show you these specimens as a proof of it. This is really a work of art ; it takes an artist's hand to make such a design. It is all printed by hand, and requires a nice eye for color, in order to produce a pleasing combination.

But while many who have failed in fine art have succeeded to their perfect satisfaction in industrial art, I have had occasion, in my long experience, to observe that often pupils who fail to succeed in designing for manufacturing develop under my training a taste for the fine art, and prove successful artists, lithographers, engravers, and have even painted on glass and porcelain.

LIBERAL GIFTS OF LOOMS TO LOWELL SCHOOL OF DESIGN.

After the establishment of the School of Practical Design, I felt very deeply the need of a weaving room and looms, that the pupil might be able to put his design into the fabric, and judge better about its desirability. I felt also that if they were able to weave, their judgment would be safer in making their design. Different loom builders who knew of my wishes, and recognized at once the importance of the matter, presented the school with looms,—George Crompton, one Jacquard and one twenty-harness loom ; Lewiston Machine Company, one eight-harness loom ; Bridesburg Manufacturing Company, one loom ; Mr. Edward A. Brigham, of Boston, an English loom. Then the necessary material, such as warp and filling in cotton and woolen, was supplied by different manufacturers ; and recently I have received from Messrs. Cheney Brothers, of Manchester, Conn., some black and white silk, which will be of great use to us.

Mr. Kastner exhibited a number of samples of very beautiful cretonnes, designed by some of the best French designers, and kindly loaned for the occasion by Mr. R. H. White, and by Messrs. Jordan, March & Co.; also, several specimens of the designs made by the pupils of the school.

He said, in regard to the first, that one can never obtain as graceful effects by machinery as by block-printing, for by machinery we cannot print one color over another, for the colors do not dry fast enough to prevent the colors from mixing. In regard to the specimens of work of the pupils exhibited, he said that they were very correctly and beautifully executed, and ready to put into the hands of the printer, and that, having shown some of their work to his brother, who is a manufacturer in Paris, the latter said that he must send here for some finishers.

Mr. Kastner also exhibited some specimens of cassimere woven at the school, which some manufacturers had pronounced to be very finely made.

ADVANTAGE OF HAND WORK.

Mr. Atkinson said : After we have done the best we can with machinery in the cotton manufacture, there is no substitute for the hand. Cotton grows in the centre of India, and the cotton fibre is the only one that can be spun without machinery, and then woven by the use of nothing but the reeds that grow near it. In the cotton manufacture there have really been but two original inventions, the first of which is the saw gin, which is a barbarous instrument, and the second is the drawing the fibre by means of rollers. All other machinery for the cotton manufacture is a repetition of what was used in pre-historic times ; thus, the spindle is purely a copy of the distaff which was whirled by the finger. The best weaving is still done by the use of a very simple loom in Lyons, which is nearly a copy of the pre-historic loom. I recently saw a beautiful specimen of fancy weaving done entirely by hand, within thirty-six hours' journey from Boston, by a people who buy almost nothing but steel needles, but manufacture everything else that they use. The beauty of cretonne has never been approached by any machine. Indeed, there is too great a tendency in this country to make machines of our children. Block-printing is still used in the manufacture of wall paper in a factory on Norwood Avenue, but no block-printing of calico is to be found in this country. In reply to a question as to the comparative age of cotton and linen, Mr. Atkinson said that linen is really the oldest fabric known, though cotton may have been known earlier ; indeed, it is mentioned in the time of Herodotus.

The meeting was then adjourned.

APPENDIX U.

PAPERS RELATING TO EUROPEAN ARTISAN AND INDUSTRIAL ART SCHOOLS.

- I. Introduction.
- II. The Artisans School, Rotterdam, Holland.
- III. Some European Industrial Art Schools, by Charles M. Carter
of the Massachusetts Normal Art School.

APPENDIX U.

PAPERS RELATING TO EUROPEAN ARTISAN AND INDUSTRIAL ART SCHOOLS.

I.

INTRODUCTION.

The interesting papers contained in this Appendix give a view of some European Schools of Industrial Art which it is believed will be found of value to American instructors interested in Industrial Art Education.

The first paper is taken from the official statement, made by the authorities of the Industrial School for the Artisans of Holland, which accompanied the exhibit sent by that school to the Centennial Exhibition in Philadelphia.

The second paper consists of a careful and detailed report upon some Industrial Art Schools in European countries, made to the State Board of Education of Massachusetts, by Mr. Charles M. Carter; then connected with the Massachusetts State Normal Art School. Professor Carter's long connection with Industrial Art Education in Massachusetts, and, latterly, for some years, with similar training in the schools of Denver, Colorado, give assurance, if any were needed, that he brought to his studies of the European schools, a clear comprehension of the kind of information most needed by American investigators. His subsequent success in his chosen life-work as art teacher, lecturer and author, would seem to show that his studies of European methods had, at all events, been of value to himself; and it is hoped that his record of them here given, may prove of like value to others.

II.

THE ARTISAN'S SCHOOL, ROTTERDAM, HOLLAND.

(Established in 1869.)

Accompanying the exhibition of specimens of the drawings and of the practical work of the pupils of this school, which were sent to the Centennial, at Philadelphia, was a brief account of the institution, printed in Dutch and in English, from which the following extracts are taken.

This school is of interest as showing that in the older countries similar obstacles to the training of artisans exist that are met with here, and also, as giving one of their methods of successfully overcoming these obstacles. The "Worcester County Free Institute of Industrial Science;" The "School of Mechanic Arts," of the Massachusetts Institute of Technology, in Boston; The Industrial classes

attached to the Metropolitan Museum, in New York; and the Manual Training School of Washington University, St. Louis, Missouri; are the institutions in the United States which give similar practical technical training in mechanical industries. The night classes of The Maryland Institute, Baltimore; The Franklin Institute, Philadelphia; The Cooper Union, New York; and the Ohio Mechanics Institute, Cincinnati; are designed for a similar class of pupils, but fall far short of giving the complete and thorough preparation for life work that is undertaken in this Holland school. It is interesting also, to see how the benevolence of private citizens and the sagacity of civic and provincial authorities have here combined in an undertaking which regards the interest of the community not less than that of the fortunate individuals.

As an attempt at a practical solution of difficulties arising from conditions similar to those which furnish an ever growing problem in American cities and towns, this Dutch School for the training of poor children to become efficient artisans,—workers and bread winners instead of idlers and paupers,—may be commended to the consideration of all interested in the subject of the practical education of American workers.

OFFICIAL ACCOUNT OF THE SCHOOL.

The great scarcity of trustworthy and clever workmen, so keenly felt for several years, has certainly caused many an architect and many a builder to wish that something efficient might be done in order to train up young artisans to clever workmen. In the present day, now that the wages of workmen do not always increase in the same ratio as their wants, the workshops are no longer, as they formerly might have been, the best schools for young beginners. In order to earn for themselves as much as possible the men have no time to occupy themselves with the boys. Every minute which a workman devotes to helping his young companion, is a loss to himself. So the youngsters have no other means left to qualify themselves for their trade than looking at what the men do, and it may be easily comprehended that such cannot be called a proper training.

Under these circumstances the Rotterdam Department of the Netherlands Architectural Society, whose members are nearly all architects and master-builders, judged that something must be done for the practical education of young artisans and took the matter in hand.

A Committee was constituted to prepare the foundation of an Artisan's School in Rotterdam. This Committee, after some deliberations with the authorities and the Government Inspector of Middleclass Schools, obtained an annual grant from the Town Council (voted unanimously on July 8th, 1869) on condition that the programme of the School include all the branches of the theoretical instruction, which are taught at the "Public Middleclass-School with a course of 3 years." For on this condition the Government was inclined to grant the Town Council exemption from the law, which prescribed such a Public School in Rotterdam.

The funds for the foundation of the school were readily obtained by voluntary contributions and the Committee soon had the satisfaction of being able to buy a large building, which was speedily fitted for the purpose and could be openly inaugurated on April 11th 1869 in the presence of a large number of the authorities and supporters of the School.

To give further details of the history of the school might be considered less to the purpose. We now pass to a description of the building, the school rooms and the workshops, after which we will endeavour to give an idea of the method followed in the practical and theoretical instruction, and conclude with the results which have been obtained down to the present time.

The main building contains on the ground-floor the residence of the Director and the Boardroom; on the first story the Director's office, masters' waiting room, classroom for the mathematical branches, size 50 square meters, classroom for physics, 79 m², and the classroom for repetition of general branches, 62 m²; on the second story of the classroom for construction-drawing, 115 m², and for rectilinear drawing 80 m²; on the third story the classroom for model and ornamental drawing, 132 m², and the painters workshop, 70 m².

The workshops for the different trades are behind the main building. Continual enlargement is required by the increasing number of pupils. Now again a new and considerable extension is contemplating. As soon as this is effected the workshops will have the following dimensions.

The workshop for carpenters	465 m ²
“ “ “ blacksmiths	85 “
“ “ “ metal and bankworkers	193 “
“ “ “ metalturning	79 “
“ “ “ cabinetmakers	184 “
“ “ “ stonecutters	63 “
“ “ “ masons	63 “

PURPOSE OF THE SCHOOL.

The school has been established for the purpose of training youths by practical and theoretical instruction to become clever artisans.

To take their place in society it is absolutely necessary for artisans to be practically and theoretically formed and fit for their work. Therefore the pupils are developed in both respects. Practise and theory are united and so everything like cramming is avoided.

The practical instruction, certainly the most important for these pupils, who when leaving the school must be fit for practical life, is given in the afternoon in special workshops by clever masters, where the boys are taught for carpenters, smiths, braziers, painters, masons, stonecutters, cabinetmakers, woodcarvers, modellers, turners etc. All petty work is entirely excluded; the boys are as much as possible occupied with work of solidity and utility either for use in the school or for sale to the trade. This instruction is given in such a way that without exaggeration it may be said that the pupil from the moment of entering the school (in this instance the workshop) enters into real life. In the first place he is made familiar with the tools, and immediately afterwards entrusted with objects which, finished, have a real destination, so that his work is never useless in his own eyes. The ambition and the desire to do right are kept more alive in this way than by working without a well defined aim. Moreover experience has taught that a promise to be allowed to work at a large and bona-fide piece of workmanship, excites ambition in the boys.

The workshops are all, as far as possible, up to the standard of the present day, and provided with all necessary tools and conveniences. In the carpenters' shop, where more than 80 pupils are taught together, there are a sufficient number of benches with all further requisites; in the smithies, with 70 boys, are forges, anvils, benches, vices, etc.

THE PRACTICAL TECHNICAL WORK OF THE BOYS IN THE SHOPS.

Besides the continual enlargements and improvements of the several workshops, required by the increasing number of pupils, constructed by the boys themselves under the eye of the masters, the carpenters make chests for the use of the school, benches, trestles, ladders and steps, windows, doors, desks, etc. The smiths: big nails, cramps, hooks, hinges, locks, stoves with appurtenances, screw nuts, smith's tongs, girders, etc. The braziers: different kitchen-utensils, as watercans, soap-tins, baking-pans, kettles, dustpans, stair rods and eyes, basins, etc.; furthermore they are taught stretching, turning, forging and soldering. The instrumentmakers, working in the smithies, are moreover instructed in the cutting of screws and worms, the forging of steel and copper and the casting of copper objects. The masons make different joints, plain walls, foundations, chimneys, niches, sewers, arches, etc. The stonecutters sinkstones, steps, stone thresholds, keystones; besides this they are taught the hewing of slabs, transposing stones, placing finished pieces of masonry, flooring tiles and placing plinths. The painters are instructed how to make putty, to grind paint, to stop, to smooth, to rub, to cut and set windowglass, to write and paint letters, and to imitate wood and marble. In the workshops for cabinetmakers, woodcarvers and turners, they make benches, lime and screw tongs and other tools, drawers, modelled and carved ornaments, etc.

THE ELEMENTARY STUDIES IN THE SCHOOL ROOMS.

A few hours every morning are devoted to instruction in general branches, a repetition of what the boys have learned in the primary schools, as they have had to pass an easy examination before being admitted. For every class, except the

first, it includes reading, writing and arithmetic, the geography and history of Holland and grammar. The grammatical instruction for the different classes embrace the parts of speech, exercises in writing and easy composition without grammatical faults. In the arithmetic classes are taught the percentage, the rule of three, simple and compound progressions, measuring of superficies and bodies, square and cube roots; for the second division vulgar fractions, examples in vulgar and decimal fractions, measurement of superficies and square roots; for the third division it only goes to the four fundamental rules in decimal fractions and the measurement of quadrates and rectangles.

Practical arithmetic proves to be of great use in developing the mental powers of the pupils; it will be superfluous to say that in this branch the examples are always taken from daily practical life.

In the algebra classes the boys are taught the knowledge and application of simple and fractional forms, the greatest common measure and the smallest common denominator, involution and evolution in geometry and the principal theories of lines, angles, triangles and polygons and their applications. In treating mechanical arithmetic, theorems are dealt with respecting the seven simple tools, as levers and balances, pulleys with fixed and loose wheels and tackles, the windlass and capstan, the inclined plane, the screw, the wedge and the jack.

The instruction in physics comprises the leading properties of bodies, equilibrium and movement.

In all these branches the teachers bear in mind that the boys are to become artisans and the examples are therefore taken as much as possible from their future profession.

The singing-classes, to which a few hours a week are devoted, give very satisfactory results and are certainly not without a favorable influence on the pupils.

TRAINING IN DRAWING.

In model and ornamental drawing the boys begin with copying rectilinear and curved figures and simple and composed ornaments from models placed at some distance. As soon as they are in this way made familiar with the elements and can make copies from models, the boys are set to draw figures and plaster-ornaments from life.

The same method is followed in the course of rectilinear and architectural drawing. As soon as the boys have obtained some practise by copying mathematical problems and constructions from models, they are set to draw simple constructions from life, wood, iron or brickwork, viz. window joints, doors jambs, ravelins, stair-cases, simple roof-constructions, brace-works, hinges, screws, springs locks, masonry-joints, simple stonework, profiles of cornices, architraves, panels, joints, panels, etc. All these objects are drawn from life or worked out from simple outlines on a given scale.

In the highest classes the boys draw perspectives, projections and sectional views of objects belonging to their profession, of natural size. To give an idea of this system we mention that a frame with sash-windows is drawn plain, standing and in sections, so that the place of the crosspieces, head-pieces, stone thresholds and wainscots may be indicated as clearly as possible; afterwards the different pieces are drawn in details, as the joints of the frame, the stiles with the threshold to which they belong, etc.; and this is done in such a way that the different parts are shown from every side.

To draw a lock, the pupil proceeds as follows. After having drawn the outside, he removes the plate and draws the inside, locked as well as unlocked; afterwards every part that offers any peculiarity is treated separately and from every point of view; the up and the underside of the slide are drawn and also the tumblers and the spring. Then the lock is again put together by the pupil, so that at the same time he has gained a clear idea of the right place of every part.

ALL INSTRUCTION DIRECTLY ADAPTED TO THE PROBABLE NEEDS OF THE FUTURE WORKMEN.

From this sketch may be seen that the character of the school is taken into consideration in every subject that is taught and that the instruction is altogether so arranged as to assist the future requirements of the pupils. For the workman must not only be able to make a good drawing, but he ought to understand what he draws and also to make a thing belonging to his profession after having seen a good drawing of the same.

The number of masters amounts to 21: a director (Mr. D. de Vries) who is at the same time teacher of construction and projection drawing and the knowledge of

materials, a sub-director, teaching construction-drawing, a teacher of rectilinear and architectural drawing, two teachers of ornamental and model-drawing, a teacher of physics, one of mathematics, one for repetition of general branches, a singing-master, four master-carpenters, three smiths (two for bench and one for forge-work) one metal-worker, one stonecutter, one cabinet-maker, one painter, one modeller and wood-carver and one wood-turner.

The number of pupils, almost all without exception workmen's children, was at the beginning of the first year 111, the second 132, the third 134, the fourth 156, the fifth 189 and the sixth 198. This yearly increase clearly shows not only that the school meets a keenly felt want, but also that its results are more and more appreciated. For as a general rule it is a sacrifice of the parents to keep such boys, as those for whom our Institution is destined, three or four years after they have left the primary school, without any earnings; generally such boys have as soon as possible to earn something and contribute their part to the support of the family, even at the cost of progress and development.

From a pecuniary point of view the admission of the boys is made as easy as possible, a contribution of 5 guilders (2 dollars) a year only being charged for each. And those parents who are not able to pay even this small sum, may easily obtain admission for their children on application to those supporters of the school, whose higher contributions give them the right to place one or more pupils free of cost. The boys must be from 12 to 15 years old and have to pass an easy examination in reading, writing and arithmetic, before being admitted.

SUPERVISION OF THE GRADUATES.

When the boys have successfully completed the course, of three years, they are honorably dismissed and the Committee procures them good places as workmen, where for five years longer it still keeps them in view and exercises its influence for their welfare. The number of pupils honorably dismissed was after the fourth year (thus at the termination of the first complete course) 28, the fifth 31 and the sixth 17, and unanimously their masters declare to have found them superior to their comrades in ability, development and discipline. Their wages are considerably higher than those of other youths of the same age. At first they met with some opposition in the workshops, but now that three years' experience has proved them to surpass other young men in aptitude and good behaviour, this prejudice is removed and they are received cordially by master, foreman and fellow-workmen.

Such an Institution as our Artisans' School arranged on a liberal footing in the best possible way, certainly requires considerable and permanent expenses for salaries of the numerous staff of masters as well as for the materials and the repair of the buildings.

It will be easily understood that the expenses can only be defrayed by the material support of a great number of voluntary subscribers and the liberal grants of the Town's Council and the Provincial Government. Happily this support, from the day of the establishment of the school till the present, and the excellent results of the work, give the hope that the existence of the School is now guaranteed by the interest the public takes in the development of the working-men.

The Board of Directors,

L. PINCOFFS,

H. VAN DER LINDEN, Dz.,
Chairman.
Secretary.

ROTTERDAM, *January 21, 1876.*

III.

SOME EUROPEAN INDUSTRIAL ART SCHOOLS.

By CHARLES M. CARTER, of the State Normal Art School of Massachusetts.*

Industrial art schools, as a means of direct influence on industry are of the greatest importance. They are almost entirely lacking in the United States. The following description of European industrial art schools is here presented, because it is believed that our people desire all the educational means which have enabled European productions to gain a world-wide market; to say nothing of the advantages resulting in other directions.

* Reprinted from the Report of the Massachusetts Board of Education for 1881-2.

The art education of Europeans, as far as it relates to general education and industry, is attained by three means.

1. Elementary instruction in the public schools.
2. Industrial art schools.
3. Museums of industrial and fine art.

Of these means we have employed the first, and to a limited extent the second and third. While it is admitted that the study of drawing in our public schools gives many desirable results, it should be stated that in Europe the most *direct* influence upon the people and industry is attained by industrial art schools and museums. The first lead to a proper appreciation and study of the second, which in their turn, by improving the taste of the people, create a demand for artistic industrial products, which are the result of industrial art schools. The use of these means largely accounts for the superiority of European productions dependent on artistic knowledge.

The schools described are representative of the best in their countries, and similar to those which exist in every town of importance. The increasing similarity of our demands to those of Europeans makes it imperative that we should also establish industrial art schools.

ÉCOLE NATIONALE DES ARTS DÉCORATIFS, PARIS.

This is generally conceded the best school of the kind in France. It stands pre-eminent because of the extent of its programme and the excellence of its teachers. It is under the direction of the government, from whom it receives great assistance. It is recognized as having considerable influence on the industry of France. The complete title of this school is "National School of Design and Mathematics for the application of the fine arts to the industries." The instructions are applied to art industries and the building professions.

The instruction of the school comprises:

1. Designing and sculpture.
2. Mathematics and architecture, combining a graphical part and oral courses.
3. An advanced course on the history and composition of ornament.

A studio of applied decoration is attached to the school.

These different branches of instruction are closely related to one another; they give rise to competitions and purses.

The school has two sections, viz., the day school and the evening school, in both of which instruction is gratuitous.

To be a pupil of the school and participate in the rewards which it bestows, it is necessary to be of French nationality. However, foreigners may be admitted to study by a special permit from the minister of instruction. This permit is given them on the request of the representative or consul of their nation, with the advice of the director of the school. Foreigners have no claim on the purses.

Applicants for admission to the day school must be at least, ten years old for the evening school, at least fourteen years.

Applicants are presented by their father, mother, guardian or employer.

They must produce, with their inscription of birth, a certificate of vaccination, or an affidavit showing that they have had the small-pox. They must know how to read and write.

Applicants having attained their majority are admitted on request, and on production of testimonials as to their situation and moral character. All pupils must be supplied with the materials necessary for their studies on entering the school.

An attendance sheet, signed by the professor, attests each day the presence of the pupils in each of the classes, and what observations he may have to make on their conduct.

THE FACULTY.

The corps of instructors attached to the school comprises:

1. Four professors of drawing, two for figure drawing, one for flowers and one for ornamental design.
2. Two professors of sculpture, of whom one is a sculptor of the figure, the other a sculptor of ornaments.
3. A professor of mathematics.
4. An assistant professor of mathematics.
5. Two tutors of mathematics.
6. A professor of architecture.
7. A professor of the history and composition of ornament.
8. A professor for the studio of applied decoration.

No one under twenty-five or over forty-five years of age can be appointed to a professorship.

THE SUPERVISING BOARD OF MANAGEMENT.

The Council of Encouragement and Protection, established for the school, consists of twenty-three members.

1. The Director of Fine Arts, *President*.
The Prefect of the Seine, *Honorary President*.
The President of the Chamber of Commerce of the city of Paris.
2. The General Inspector of Instruction in Drawing.
3. A painter, a sculptor, an architect.
4. Eighteen members chosen from amongst the most prominent heads of art industries in Paris.

THE SUBJECTS TAUGHT.

The instruction comprises in its entirety,—

1st. Drawing, subdivided in the following manner:

1. Drawing from geometrical figures and solids.
2. Drawing from parts of human and animal figures.
3. Drawing from plants and flowers.
4. Drawing from ornaments.
5. Drawing from details of the round.
6. Drawing from the antique or the round.
7. Drawing from the living model.
8. Drawing from the living plant.

2d. Sculpture, subdivided as follows:

1. Sculpture copied from parts of the human figure.
2. Sculpture copied from animals.
3. Sculpture copied from plants and ornaments.
- NOTE.—The models are plastercasts and drawings.
4. Sculpture from the living model.
5. Sculpture from the living plant.
6. Exercises in composition.

Some ideas of anatomy are given the pupils of the sections of drawing and sculpture.

3d. Mathematics, as follows:

1. Arithmetic.
2. Theory of the logarithm and algebra.
3. Elementary geometry.
4. Perspective.
5. Rectilinear trigonometry, with its application to the plotting of plans and surveying.

4th. Architecture, comprising:

1. Descriptive geometry, with its applications to the projection of bodies, the sections of materials, and perspective.
2. Statics.
3. Elements of architecture.
4. Knowledge and use of materials.
5. Drawings, copied from iron-work, joinery, mechanical contrivances, etc.
6. Exercises in composition.

5th. History and Composition of Ornament, comprising:

1. An oral course.
2. Some notions of the history of ornamentation at all periods.
3. Some ideas of botany applied to ornamentation.
4. A course of design on the blackboard by the professor.
5. Exercises in composition.

6th. The course of applied decoration, consisting:

1. Of studies executed after decorative works and the most remarkable productions of industry.
2. Of attempts at decorative composition.

Color is applied in the execution of the different exercises comprised in this course.

The instruction of each of these sections is intrusted to a special professor.

The Order and Degrees of Instruction.

The section of Drawing embraces two classes :

1. That of drawing from geometrical figures and solids and from designs. This class comprises three divisions.

2. That of drawing from the round and from nature. In this class there are two divisions for the study of the round, and one division for the study of the living plant and the living model.

In order to pass into a higher division, or from one class to another, it is necessary to obtain the approval of the jury, based on competitive work.

The section of sculpture includes two divisions—that of details and the complete round, and that of the living model.

The section of Mathematics contains :

1st. A course of arithmetic up to logarithms inclusive; to this is joined a part of algebra. This course is followed simultaneously with the geometrical course, in order to facilitate their application.

2d. A geometrical course, which comprises two distinct classes, arranged progressively :

1. That of graphical studies, in which the pupils reproduce geometrical plates. This class is elementary.

2. The theoretical class, which follows the former and has an oral course.

3. Those pupils of the class in geometry who have made the graphical studies are admitted to the course in laying washes.

4. It is requisite, in order to be admitted to the course of perspective, to have made the plates of the courses of geometry and of laying washes.

The section of Architecture is divided into three classes :

1. The first class, which is elementary. The pupils of this class copy with ruler and compasses ornaments, constructional and architectural details.

2. The second class, the instruction of which consists in an oral course, bearing principally on descriptive geometry and its applications; this course embraces from eighty to eighty-six lessons.

3. The third class, in which the pupils apply the ideas they have acquired in the two preceding classes to architectural composition and construction.

No one can take part in the competitions for the composition of ornament, unless he has been admitted to the first class of drawing from the copy.

In order to be admitted to the studio of applied decoration, it is necessary to have obtained rewards of merit in the higher divisions of the various branches of instruction.

CONCOURS.

The *concours*, or competitions, which form so prominent a feature in all French schools are here described somewhat fully, because they seem to embrace some very desirable features.

These may be classified as follows:—

1st. An uninterrupted order of *concours*, bearing successively on the different branches of instruction. These consist of, 1st, monthly competitions; 2d, of competitions at the end of the year, and 3d, of two *grands concours* in composition, one in design, the other in sculpture. These competitions take place at the end of the school year, and are executed in closed compartments (*en loges*). For the monthly competitions each professor, according to his specialty, gives forth the subjects and conditions of competition, after having submitted them to the approbation of the director. The monthly competitions are judged by two professors conferring under the presidency of the director. For the competitions at the end of the year the subjects are chosen and the conditions established by an assembly of the professors.

The competitions at the end of the year are judged by the assembly of professors under the presidency of the director.

For the *grands concours* the programmes are established by an assembly of the professors.

In all of the competitions the standing of the pupil is determined by a system of marking. Those who stand highest are rewarded either by prizes or *accessits*.* Pupils are not eligible to these rewards at the end of the year, unless they have attended the school during the six months preceding.

Detailed order of Competitions.

I.—SECTION OF DESIGN AND SCULPTURE.

The competitions are monthly, and at the end of the year.

1st. Copied Design.

In the first division of copied design, there are, for the human figure, for flowers, and for ornaments, four competitions in each kind, including the competitions at the end of the year.

2d. Drawing from the Round and Nature.

In this class, and in each of its divisions, there are for each kind of study three competitions a year, one of which takes place at the end of the year.

3d. Sculpture.

In sculpture there are in each division and in each kind three competitions, each from the round and nature; besides there are six *concours* in composition. In the sections of drawing and sculpture, the competitions are finished in a maximum of six sittings of two hours each. The competitions at the end of the year are accomplished in two days' work.

II.—SECTION OF MATHEMATICS.

In this section there are each year : 1st. Four competitions in arithmetic; one at the end of the year. 2d. Four competitions in geometry; one at the end of the year. 3d. In perspective, one competition at the end of the year.

III.—SECTION OF ARCHITECTURE.

For the first class, an annual competition based on all the drawings executed during the year.

For the second class, annual competitions in descriptive geometry based on the finished drawings; also, annual competitions in construction of shadows, perspective, stereotomy and construction.

For the third class, competitions every three months in descriptive geometry, the construction of shadows, perspective, stereotomy and composition.

IV.—THE HISTORY AND COMPOSITION OF ORNAMENT.

This course gives rise to ten competitions which follow each other from month to month during the year, and to a competition at the end of the year. Besides these there is a competition resulting from the comparison of the portfolios of drawings executed by the pupils from the designs of the teacher.

The *grands concours* in design and sculpture comprise each a trial competition and a final competition.

No one is admitted to the trial competition, unless he has followed the courses of the school during the six months preceding. The trial competitions in design and in sculpture consist of three productions, as follows:—

A figure drawn or modelled from nature;

A plant drawn or modelled from nature;

Drawing of an ornamental composition.

This composition, the programme of which is given to the pupils in the morning, must be accomplished on the same day.

After the trial competition, the pupils (not to exceed seven in number) are admitted to the final competition. The programme is so conceived as to necessitate on the part of the competitors the employment of architecture, the figure and ornament. The programme fixes the scale and proportion of the finished drawing. On entering the closed compartments (*en loge*), the pupils admitted to the final competition receive the programme. During the same day they must make a sketch, from which they must not deviate in the course of their work, under penalty of being declared out of the competition. As a means of preventing deviation the clay sketch is painted a decided color, as blue. The final competition must be ended in fifteen days of work.

Competitors must hand in with their work a study of a part of their composition, drawn on a scale of one-quarter full size. This drawing must indicate the profiles, sections, details of construction and arrangement of this part of the composition.

The grand competitions are judged by the extraordinary jurors. The pupil who gains the first prize in one of the grand competitions is entitled to a sum of 100 francs; and he who gains the second prize, to a sum of 80 francs. To each *accessit* (honorable mention) there is attached a sum of 60 francs. Every pupil admitted *en loge*, who has done the competition, receives 40 francs.

On the demand of the jury, those works which have obtained first prizes in the grand competitions will be reproduced by photography or casts, so that they may be preserved at the school.

The Purses.—There are established at the school purses for the benefit of pupils who distinguish themselves in the simultaneous study of the different courses taught at the school. These purses are eight in number; to wit, four purses of 360 francs each; three purses of 480 francs each, and one purse of 600 francs. These purses are payable by the month, and are taken from funds belonging to the school. The purses cannot be divided or shared. To have a claim on the purses, one must be a Frenchman, not over twenty nor under fifteen years of age.

No one can become owner of a purse, unless he devotes himself simultaneously to the studies of the art and science of design, the union whereof is the peculiar characteristic of the instruction afforded by the school, and unless he conforms himself to the order established in each branch of instruction.

The plan of studies must be so arranged, that both these conditions may be complied with.

The purses are accorded every year to those pupils who have obtained the greatest number of points in the entirety of all the faculties. These faculties are arranged in eight series, to wit:

1. Drawing from the ornament and from flowers; portfolio of designs concerning ornaments and flowers.

2. Drawing from reliefs of ornament, and from the living plant.

3. Arithmetic, geometry, geometrical plates, washes, perspective.

4. Architectural drawing, construction of shadows, construction course, designs for joinery, iron work, etc.

5. Sculpture from ornament, the antique, the living plant and from nature.

6. Drawing from human and animal figures; drawing from the round and from nature.

7. Sketches of decorative compositions emanating from the courses of sculpture and architecture, and the course on the history and composition of ornament.

8. Divers finished drawings made at the school and in the studio of applied decoration from decorative objects (with plans, sections, etc.) and compositions executed in this same studio.

Annually, at the end of the school year, those efforts which have obtained prizes are exhibited in the school building. This exhibition is public and lasts five days.

Only such works as have obtained prizes and those which have been executed at the school, with a view to competition, are admitted to this exhibition. Finished architectural drawings made from sketches composed at the school are excepted from this rule.

NORMAL SCHOOL OF THE ARTS OF DESIGN, SAINT JOSSE-TEN-NOODE, BRUSSELS.

This school corresponds somewhat to our evening drawing schools. It is open both day and night; but the principal attendance is in the evening. Three hundred and fifty students are sometimes present. The system of the school as a whole presents nothing remarkable. Some of its details, however, are novel and interesting. The work of the school is divided into four parts, viz. :—

Part First. Drawing.

Part Second. Professional applications.

Part Third. Modelling and carving on stone.

Part Fourth. Ornamental painting.

Great attention is paid to the thorough study of ornament. Plants are drawn and modelled. Standard ornaments are copied in the same way. This practice is continued long enough to influence the taste of the pupils and make their minds a store-house of the best in ornament. Study is made of the conventional leaves belonging to various styles. The *motifs* of one style are translated into corresponding forms of another.

The most peculiar thing about this school is the great importance attached to blackboard drawing. For this purpose blackboards are distributed about the room as well as upon the walls. They are used principally in making free sketches of designs following the general direction of the teacher.

This use of the board will certainly cultivate great readiness in design, and has the advantage of causing the pupil to think little of his material, but almost wholly of the idea which he is trying to develop. The scientific study of light and shade on geometric solids is made so thorough, that their designs show great truthfulness in this respect. The student is required to make every week a large ornamental composition on the blackboard.

The department of ornamental painting comprises three classes.

In the first or lowest class the object is to make very skilful copyists; in the second, intelligent interpreters; in the third, capable specialists and designers.

First Class.—Handling of brushes; application and imitation of tints; theory of colors; coloring substances, their preparation and use with plaster, gum arabic, oil and wax.

Exercises.—Imitation of enamels and incrustations; making cloisonnés dissolving tints; painting with colors given from models; making objects picked out with gold; copying ornaments with monochrome, gold and colors.

Second Class.—Theory of light and shade; observing and reproducing these effects on variously colored bodies with dead, shining, translucent or transparent surfaces.

Exercises.—Painting successively from nature and memory polyhedrons and round bodies exposed to various lights, or seen from different sides, and projecting shadows on plane, concave and convex surfaces; tracing the thicknesses and shadows on cartouches and volutes seen from various angles. Pounced ornaments are also painted on plaster, stone, gold, bronze, alabaster, onyx, etc.

Third Class.—Various renderings of vegetable and animal forms, and the human figure; styles; *motifs* of ornaments; the forms and colorings which characterize them; harmony, elegance and wealth of design and coloring.

Exercises.—Painting plants, geometrical representation of flowers, and formation therewith of *motifs* adapted to the shape of given surfaces; painting fruits and animals from nature (the pupil is required to furnish in one sitting the *motif*, which serves as his point of departure, unless this *motif* exacts some preliminary preparation or rough sketch); forming groups therewith, and interpreting them in conformity with some given style.

Translation of a *motif* from one style to another.

Composing and painting ornaments in various styles.

Composing *ensemble* drawings, and paintings.

Practical Exercises.

Keramic painting applied to the decoration of edifices and furniture.

THE ROYAL SCHOOL FOR ART INDUSTRY, MUNICH.

This school is the result of the growth of the Munich Society of Industrial Art. It has done important work. For many years interest in industrial art had been dormant. It became necessary either to educate native workmen or employ foreigners. The increase of French importations also caused alarm.

In June, 1850, a meeting of all those interested in industrial art resulted in a quickly formed society. Government assistance, in the shape of money and free use of rooms, was given. A committee was appointed to draw up the details of a plan which should especially develop German industrial art. Their plan embraced the production of drawing copies, competitive problems, the publication of a journal, the founding of a technical library; the organization of a permanent exposition, and weekly social meetings, enlivened by lectures by persons engaged in art industry. England had just begun the world fairs. The superiority of French productions alarmed all countries. In Germany the result was an increased interest in museums and schools.

In 1855 the Munich society opened a school with seven scholars. At the end of the year the number had increased to fifty. The subjects taught were drawing, modelling and carving. The good results of the school induced the government to make it preliminary to the Royal Academy of Art. The cause was still further advanced by Maximilian II. resolving to make a collection of renaissance and mediæval objects of industrial art. The project resulted in a museum which is one of the best in the world. This museum quickened the movement commenced in 1850. Societies and persons were moved to give assistance to various provincial schools.

The growth of the Munich school made it necessary that its accommodations and scope of study should be enlarged. Maximilian II. had left a sum of money to be

devoted to industrial purposes. The use of a part of this money for the establishment of an industrial art school of advanced aims met with great favor. The result was that the society's school formed the nucleus of what became the Royal School for Art Industry of to-day. In 1870 stipends were allowed to deserving students. This proved to have a good influence. The female department, which had existed independently, was now joined to the school. Its attendance comprises one-third of the total number of pupils.

The importance of this school may be judged when it is stated that it influences other schools in Bavaria, and is intended as an example to them.

Examples of professions represented by students of the school :—

- Sculptors, carvers, stucco workers.
- Stone masons and marble workers.
- Wrought-iron workers, intaglio cutters.
- Joiners, turners.
- Potters, tile makers.
- Gold and silver workers.
- Metal workers.
- Leather workers.
- Locksmiths and tinsmiths.
- Decorative painters, gilders.
- Glass and porcelain painters.
- Lithographers, photographers, wood engravers.
- Architectural draughtsmen.
- Designers of fabrics.
- Paper-hangers, bookbinders.
- Candidates for teaching.
- Academy scholars.
- Those without professions.

Before entering on details of the school, it should be stated that it is "an institution directly under the authority of the ministry of the interior, established for the purpose of affording art instruction to the extent conditioned by the needs of art industry and practical professional life. It is, therefore, essentially a school for the forming of industrial workers, draughtsmen for art-industrial professions, etc. It also furnishes the education required by teachers of drawing, and is a stepping-stone to higher art studies in the Royal Academy."

The school is divided into two distinct departments, the male and the female, each having particular rooms and courses of studies.

MALE DEPARTMENT.

The instruction is divided into *preliminary instruction*, embracing the studies common to all the courses; and *professional instruction*, which is divided up with reference to the principal branches of art industry, and includes the special studies required for the same.

The courses of preliminary instruction are—

- Technical drawing: linear drawing, geometry, descriptive geometry, shadows and perspective.
- Architectural drawing.
- Ornamental drawing.
- Painting of flat ornament.
- Theory of ornamental forms.
- Figure drawing, including animals and drapery.
- Drawing and painting of flowers.
- Modelling and carving.
- History of art and the styles.
- Anatomy.

The courses of special instruction are—

- Architecture: studies in architectural decoration, furniture and utensils.
- Flat ornament: studies for all the branches of textile industry.
- Figure decoration: studies for figural decoration in drawing and painting.
- Decorative painting: studies in ornamental painting for walls and ceilings.
- Glass staining: studied in connection with painting on china (keramic painting).
- Modelling (including carving): studies in plastic architectural decoration, furniture and utensils.

For the pupils in the professional classes there exist also special courses in wood engraving and etching.

The instruction of the classes existing, according to above plan of study, is given in the form of lectures, together with occasional exercises and practical works.

During the winter term evening instruction is afforded, to which only the pupils of the institution have access, as a rule.

To secure admission to the school it is necessary : 1st, that the applicant be fifteen years old; 2d, that he produce school reports, or other papers establishing his moral worth, and that he have permission from parents or guardians to visit the school; 3d, that he prove his having attained an elementary knowledge of free-hand drawing or modelling, by executing such a work in the school.

Besides this, especially when immediate admission to the professional classes is desired, proof of apprenticeship at a trade may be required. Art industrials, working practically in studios or workshops, may be admitted to single courses of the preliminary or professional instruction as special students.

An entrance fee of two marks is required. Regulars, as well as specials, must pay a fee of ten marks per term.

The plan of study for each scholar during the term is established by the faculty at the beginning of the same. This is done separately for each pupil with reference to his acquirements, progress, capability and ultimate purpose. Below will be found a model, on which the study plans of the pupils are based, of course with allowance of such modifications as may be conditioned by special cases; it is divided into two principal groups, according to whether the ultimate profession of the students is of an essentially *graphic* nature (such as pattern drawing for textile industries and vignettes, decorative painting, glass-staining, lithographing, wood-engraving, etc.), or of an essentially *plastic* nature (such as sculpture, carving, metal-working, pottery, furniture-making, etc.).

Pupils who have not yet made up their minds as to their profession, as well as those intending to study at the academy, usually join the first group. Architectural draughtsmen, decorators, those intending to teach, etc., have a plan of study compounded from both groups, according to their special needs.

It is assumed that each of these groups will usually require an attendance of four years' duration, whereof the first year is devoted solely to the preparatory branches the other three to an advantageous combination of the preparatory with the professional branches of study.

NORMAL STUDY-PLAN OF THE MALE DEPARTMENT OF THE SCHOOL.

Group I.—Pattern designers, decorative painters, lithographers, wood engravers etc.

COURSES.	Hours per Week according to School Years.			
	I.	II.	III.	IV.
Technical drawing :				
Exercises	12			
Geometry and descriptive geometry	3			
Perspective and shadows		2		
Architectural drawing	18	8		
Ornament drawing	9	10	18	10
Painting of flat ornament				
Drawing and painting flowers				
Figure drawing		10		
History of art and the styles of art		2		
Anatomy			2	
Professional instruction, according to purpose of pupil		10	20	30
Total number of hours in the week	42	42	42	42

Group II.—Sculptors, carvers, metal workers, potters, furniture makers, etc.

COURSES.	Hours per Week according to School Years.			
	I.	II.	III.	IV.
Technical drawing :				
Exercises	12			
Geometry and descriptive geometry	3			
Perspective and shadows		2		
Architectural drawing		12		
Ornament drawing	12	16	18	10
Figure drawing				
Modelling and carving	15			
History of art, and the styles of art		2	2	2
Anatomy			2	2
Professional instruction, according to purpose of pupil		10	20	30
Total number of hours in the week	42	42	42	42
There exists for <i>both groups</i> , during the winter terms, as compensation for hours lost during the day:				
<i>Evening instruction in</i>				
Theory of ornamental forms	10	10		
Ornament figure drawing				
Designing			10	10

If the arrangement of the general study-plan drawn up at the beginning of the term permits it, the distribution of the hours in each particular plan of study is determined for certain days of the week.

PROGRAMME OF STUDIES.

A. PREPARATORY STUDIES.

1. *Technical Drawing*.—This comprises,—

(a) General exercises for the attainment of proficiency in linear drawing and washes ; also for the acquirement of exactitude and neatness in drawing generally. Drawing of meanders, intervolutions, net works for parquet-floors, floor-tiles, gratings, carpets, etc. from models with indication of measures.

(b) Plane and descriptive geometry. (Lectures, three hours a week.) The most important properties of elementary geometrical forms. Equality and similarity of figures. Circle, ellipse, oval and the regular polygons. Exercises in measuring and dividing figures. Projection of points, lines, plane surfaces and bodies bounded by such. Sections and penetrations, development of surfaces, etc. Lecture with constant reference to the needs of practical industry.

(c) Perspective and shadows. (Lectures, two hours a week.) Perspective representation of plane figures, geometrical bodies, and representations of simple spaces in straight and oblique projection. In connection with this, construction of shadows, by projection and perspective.

2. *Architectural Drawing*.—Drawing of profiles and simple architectural forms, such as vases, pedestals, frames, etc. ; thereupon the five orders, examples of advantageous application of the same, from examples with measures.

3. *Ornament Drawing*.—Exercises in the reproduction of plastic forms of ornament in outline, or with full effects of light and shade. Cultivation of the understanding of the structure and meaning of ornament, in reference to its application. Plaster-casts, first of single leaf-forms and ornament parts, later on of complete ornament formations, serve as models. Herewith use of different materials and ways of representation, with regard to the future profession of the pupil. Instruction by three professors : one for sculptors, one for decorative painters, and one for all others.

4. *Painting of Flat Ornament*.—Exercises for acquiring an acquaintance with flat ornament in polychrome, from examples taken from ceramics and textile industries. Exercises for the development of the sense of color, and the technique of handling the brush.

5. *Theory of Ornamental Forms*.—Instruction in connection with the study of style ; drawing from the principal tectonic and decorative forms, which are applied in industrial art, from systematically arranged examples taken from various periods of art. These examples consist partly of plates or models, partly of drawings on the blackboard by the teacher ; they are copied in outline only, with pen or pencil. This instruction mostly restricted to the winter term.

6. *Figure Drawing* (including animals and drapery).—Drawing of single parts of the body; later on, of the whole figure from plaster-casts, from nature, and the antique; afterwards, studies from the living models, and from models of animals and draperies. Representation partly in outline, partly with complete effects of light and shade, and application of various means and methods of representation.

7. *Painting and Drawing of Flowers*.—Studies from drawn and painted flowers, casts and natural flowers. Natural or conventional reproduction of flower-forms, with reference to their utilization for the decoration of art-industrial surfaces.

8. *Modelling and Carving*.—Exercises, first from ornaments, later from figures. At first simply copying, then exercises in changing size and the means of representation. Flat figures translated into plastic forms, forms in the round to forms in relief, etc. Two teachers—one for the ornamental and one for the figural part.

9. *History of Art and the Styles of Art*.—(Lectures, two hours a week.)

(a) Concerning the development of art in connection with the history of civilization, with accentuation of the most notable periods and peoples, and special descriptions of the most prominent artists and art-workers.

(b) Concerning the laws of style in the plastic arts generally, as well as their manifestation in the various branches of industrial art.

10. *Anatomy*.—(Lectures, two hours a week.) The anatomy of man as a guide to the artistic comprehension and correct representation of the human form. This course is given during the winter term only, in the academy building, where it is held for the joint benefit of the pupils of the Royal Academy and those of the School of Industrial Art.

B. PROFESSIONAL STUDIES.

1. *Architecture*.—Studies in architectural ornament, furniture and utensils. Practical exercises in making working drawings, with particular reference to each material and its nature.

2. *Flat Ornament*.—Studies for textile industry and related branches. Designs for textile fabrics of every kind; also, wall papers, mosaics, typographical ornament, etc. Designs, based on standard *motifs*. Execution of designs for technical reproduction and multiplication.

3. *Figure Decoration*.—Studies in drawing and painting figural adornments for walls and ceilings, stained glass windows, textile fabrics, typographical ornament, etc. Use of standard examples, and designing from the living model, with special reference to the treatment conditioned by the various technical processes or the nature of different materials.

4. *Decorative Painting*.—Studies in decorative painting for walls and ceilings. Exercises in water-color, tempera, monochrome and polychrome painting. Designing of wall and ceiling decorations, with use of standard examples for inspiration. In connection with these studies, exercises in flower and still-life painting, specially for the purposes of room decoration.

5. *Glass Painting*.—Studies in glass-staining in connection with studies in ceramic painting. Exercises in painting, engraving and etching on glass. Execution of flat ornamental patterns, figural, architectural and heraldic conceits in monochrome and polychrome. Finally, exercises in painting on porcelain and china.

6. *Modelling* (including carving).—Studies in plaster, architectural ornament, furniture and utensils. Instruction for decorative carvers, stucco-workers, modelers, art-joiners, etc. Execution of models in clay, plaster, wax and wood.

7. *Working in Metals*.—Studies for workers in metal, goldsmiths, etc. Execution of utensils, vessels, articles of jewelry, and the component of such in metal. Instruction in chasing, engraving, etching and enamelling.

C. SPECIAL STUDIES.

1. *Xylography*.—Preparation of wood engravings from outline, and light and shade pictures, also from photographs. Drawing on the wood with pencil and India ink.

2. *Engraving*.—Engraving with the burin on steel and copper; etching.

PRACTICAL WORK.

Besides the regular work of the professional classes, certain orders from industrial firms in practical business are executed every year. These serve to stimulate the ambition of the scholars and maintain them in direct relations with the art-industrial world. Among the orders that have been executed for parties in Munich and elsewhere we would note:—

Several designs for iron columns, consoles, fountains, candelabras, etc., with models and working drawings of the same. A design for a clock. Designs for stoves.

Architectural working drawings for Munich architects. Designs for textile fabrics, carpets, table-cloths, etc., for various manufacturers.

The pupils of the evening schools also furnish various designs for panels, wall, ceiling and room decoration, artistic furniture, and plastic ornaments in stone, wood and metal for buildings.

Competitive Problems for practical execution are also given during the year at intervals of from six to eight weeks. The subjects are such as: a writing table; pedestal for a bust; oil and vinegar cruets; fringed edging for a portière; mural paintings for a museum of plastic art; funeral cross in metal; plaques; painted cups, etc., etc. The merits of these designs are determined by a jury consisting largely of the teachers.

Visits and studies in various art museums, workshops, ateliers and manufactories serve to familiarize the pupils with the present and past results and processes of the world's work.

EXAMINATIONS AND CERTIFICATES.

Examinations and test of proficiency by executed works, in those branches taught by lecturers, take place at the end of the school year—in some events during the course of it—in which all pupils following the courses in question must participate. To pass the same successfully is considered proof of attendance at the lectures, and entitles pupils to certificates of diligence and progress. When the result of the examinations is unsatisfactory, a supplementary examination, or, in some cases, a repeated attendance of the course may be required. If a later examination again proves unsatisfactory, the faculty may prohibit further attendance at the institution by the delinquent. The examinations of the works executed in the remaining classes are held, according to their extent and nature, by the teachers of the classes, or by the faculty at the end of the terms.

To obtain a better idea of the progress made by pupils, as well as an incitement to independent thinking and working, competitive problems from various art-industrial branches are periodically promulgated during the school, in the solution of which all the pupils may participate. Honorable mention or prizes obtained at these competitions are specially dwelt on in the certificates.

As a rule, a public exposition takes place every two years of the works executed during that period, which is expected to demonstrate the artistic direction and influence of the school. Scholars are expected to deliver the works executed by them during that period to the director of the school, for selection and retention during the duration of the exposition.

Pupils obtain on demand and after payment of the customary dues (*a*) *Certificates of attendance*, i. e., proofs of actual attendance at the school, without reference to diligence or progress; these can be obtained at any time. (*b*) *Term certificates*, establishing what progress and diligence has been shown in courses followed during a full term; these are only given when the pupil has entered the school within the first fourteen days of the term, and not left before the last eight days of the same. (*c*) *Certificates of attainment*, which establish not only the kind, duration and success of the pupil's attendance, but a suggestion as to his ultimate practical utility and capability; these are awarded only after an attendance of at least three years.

Specials can obtain only attendance and term certificates. There are five grades of marks for deportment, diligence and progress; viz., Mark I, very good; Mark II, good; Mark III, fairly good; Mark IV, mediocre; Mark V, inferior.

The *dues for certificates* are 40 pfennigs for an attendance certificate, 50 pfennigs for a term certificate, and 1 mark for a certificate of attainment. The same fees are charged for duplicates.

Indigent pupils of talent, diligence and moral worth, may be adjudged a school stipend of 360 marks after an attendance of at least two terms at the school. After an attendance of at least two years such may be adjudged a traveling stipend of 720 marks. No school stipend can be drawn for more than two years, and no travelling stipend for more than one year. These stipends are drawn from the "Maximilian Endowment for Industrial Art."

Owing to the inequality existing among the majority of pupils as to attainment, capability, special purposes, age and attendance, instruction is given as much as possible individually, excepting, of course, the lectures. It is therefore the aim of the school to have reference to individual needs, as far as the general arrangement of its studies permit such a course. Those studies in which the pupils must receive simultaneous instruction are called courses. Some of these last only one (winter) term; others two or more terms. Neither is there any general rule for all pupils as to the exact number of hours to be devoted to any one branch of study; the study-plans only show in what year such studies may be prosecuted. The grouping of studies in the plan of study is conditioned as much as possible by the final purpose of the pupil.

To aid the professional classes in acquiring a practical grasp of their respective vocations, the administration of the school may turn over to the pupils of the same, orders from outside for designs and models, as far as the capability, time and knowledge of the pupils make such a course possible.

FEMALE DEPARTMENT.

As a rule, pupils who have not yet chosen a profession are permitted to attend the school for a year only, and such a choice is therefore made a condition of their reception for a third term.

In order to follow a higher course, or to make a change from one branch of study to another, regulars, as well as specials, are required to have successfully followed the preceding course or preliminary study, and respectively to give proof of possessing the attainments necessary for such change or promotion. Besides this, the consent of the director is required in all cases. Dues are to be paid immediately on admission to the school. These amount to 10 marks for each term. New comers must besides pay an entrance fee of 2 marks.

Pupils, on request and after payment of the fees, can obtain term and attainment certificates.

Special Study-Plans.—The purpose of the special study-plans is to give the lady pupils such advice in arranging their studies that they may, within a given time, obtain the education necessary for a certain determined art-industrial profession. Although the duration of attendance requisite for such attainment must vary according to profession and individual talent, yet under normal conditions it is assumed that such duration will average three years.

The division of the studies on the study-plans into three-year courses is based on this assumption. When the progress of any pupil is more rapid or is slower than the average, a corresponding lengthening or shortening of the time of study will ensue.

NORMAL STUDY-PLAN OF THE FEMALE DEPARTMENT OF THE SCHOOL.

Group I. For Pattern Drawing and Decorative Painting:

COURSES.	Hours per week, according to school year.		
	I.	II.	III.
TECHNICAL DRAWING:			
Course I. Linear Drawing, Plane Geometry and first elements of Descriptive Geometry	8		
Course II. Descriptive Geometry continued, Perspective and Shadows.	16	6	
Ornament Drawing	8		
Painting of Flat Ornament			
Figure Drawing		12	12
Flower Drawing and Painting		2	2
History of Art and Theory of Style		12	18
Professional Instruction, according to pupils' special purpose			
Total hours per week	32	32	32

Group 2. For Lithography and Xylography:

COURSES.	Hours per week, according to school year.		
	I.	II.	III.
TECHNICAL DRAWING AS ABOVE:			
Course I.	8		
Course II.	18	6	
Ornamental Drawing		12	12
Figure Drawing		2	2
History of Art and Theory of Style		12	18
Professional Instruction	6		
Total hours per week	32	32	32
There exists for both groups during the winter term, as compensation for hours lost during the day:			
<i>Evening Instruction in</i>			
Theory of Ornamental Forms	10	10	10
Drawing of Flower and Figure Ornament			

COURSE FOR TEACHERS OF DRAWING.

For the education of drawing teachers there is a special course. This has the duration of one school year, but pre-supposes the following acquirements:

(a) Candidates for the position of teacher of elementary drawing must have gone through the studies of the second year, as per Group I.

(b) Candidates for positions in professional art-industrial instruction must have gone through the studies of the third year, as per Group I.

The special course for teachers embraces:

Pedagogy;

Methods of instruction in drawing;

Exercises in drawing *à tempo* and on the blackboard with simultaneous demonstrative exercises;

Practical instruction;

The examination of candidates for teachers' positions immediately follows this course and takes place every year in July. When this examination is passed, the candidate receives a teacher's certificate. The periods of examination and the composition of the examining commission, are made public two months before the examinations take place.

Practical Work done by the Female Section includes: Several designs for woman's handiwork,—table-covers, towels, pillows, etc., with vari-colored embroidery; laces for trimming costumes and furniture; monogram embroidery, etc.—partly for business firms, partly for private parties. Several designs for woollen textures. A considerable number of wood engravings of every description; illustrations, vignettes, etc., for various home and foreign publishers. Some chromo-lithographs; among them plates for an art industrial publication. Paintings on porcelain and faïences, plates, plaques, cups, etc.

Visits to the National Museum and the old Pinakothek are made by the ladies of the school, during which pictorial subjects are copied on textile fabrics.

ROYAL SCHOOL OF INDUSTRIAL ART, NUREMBERG.

This and the Munich school are recognized as the only schools of Bavaria having a "pronounced industrial character." The Nuremberg school is characterized by directness of purpose. Pupils are not required to study a variety of subjects, but those undertaken are studied thoroughly. The result is eminently practical work. In those departments where design is studied, drawings and photographs are used for some time as *motifs*. As a result the pupil's mind is stored with ideas which have been the gradual outgrowth of many years. He gains the power of advancing from the point where his predecessors left off. Little regard is paid to the study of plant form as a source of inspiration. The director believes that ornamental forms should be studied first, leaving plant form for advanced pupils. They have great respect for "traditions of the past," believing that higher results will be obtained by studying works of former times, and perfecting existing ideas, than by obliging each generation to work up from nature. These being governing ideas, it is easy to understand why Bavarian schools have become largely the exponents of particular styles. At the present day the German and Italian Renaissance are studied almost exclusively.

Unlike most German schools the plans of study of the Nuremberg school are simple and clearly arranged.

I. PURPOSE AND ARRANGEMENT OF THE INSTITUTION.

"The purpose of this school is to furnish the artistic education requisite in the various branches of art industry, and especially to form designers, modellers, etc., as well as teachers of industrial drawing." The institution consists of:—

1. *A Preparatory School*.—Descriptive geometry, architectural drawing, elementary ornament drawing, and modelling. Duration, one year.

2. *Three Professional Schools*.—Each of three years' duration.

(a) *Architectural School*.—Doctrine and application of architectural forms, as far as they can be used for art-industrial purposes, for architectural draughtsmen, furniture makers and other workers in the building trades.

(b) *School of Modelling*.—Ornament, studies from figural examples and from life, for modellers in tile and porcelain works, carvers of architectural ornament, wood carvers, engravers and metal beaters.

(c) *School of Decorative Drawing and Painting*.—Use of ornament and figure strictly according to the laws of the styles, for draughtsmen of patterns and vignettes, house painters, and decorators.

3. *A Section for Teachers of Industrial Drawing.*

4. *Evening Pupils.*—Mostly apprentices from the city, who wish to educate themselves as lithographers, engravers on wood and copper-plate, etc.

The instruction at the school comprises the following branches:—

1. *Auxiliary Branches.*

(a) Descriptive geometry with popular examples, demonstrated by exercises in drawing.

(b) Construction of shadows, washes of spherical bodies with tracing of their shadows.

2. *Architecture*, or the theory of architectural forms, as far as they can be used for practical purposes; viz.:—

First Year.—Study of styles and architectural forms (Antiquity, Middle Ages, Renaissance), the orders, cornices, simplest art-industrial objects (pupils' own copies), with full-size profiles.

Second Year.—Study of profiles, with regard to material and the laws of style conditioned thereby; copies of more ornate art-industrial objects, notably furniture, with full-size details; instruction in making working drawings.

Third Year.—Continuation of the same, with attempts at designing.

3. *Ornament Drawing*; viz.:—

First Year.—Elementary, with reference to the main styles, as completion of the simultaneous studies in architecture.

Second Year.—Laws of ornament; studies from nature.

Third Year.—Ornament drawing, with set programmes for the filling of given spaces; designing of utensils from the domain of minor art, with special instruction on the laws of style necessitated by the materials used.

4. *Decorative Painting* (flat); viz.:—

First Year.—Principles of the division of surfaces; practical instruction in color by copying of colored decorations.

Second Year.—Continuation of studies from colored designs; practice in the technique of glue water-colors; first steps in designing.

Third Year.—Execution of simple wall and ceiling decorations; designs for fabrics, etc., from sketches furnished.

5. *Figure Drawing.*

First Year.—Outlines and faintly shaded drawings from plaster models.

Second and Third Years.—Studies from the living model.

6. *Painting from the Living Model*, to supplement the studies for decorative painters in the last year.

7. *Modelling.*

(a) *Ornamental Modelling.*

First Year.—Simple objects from the domain of architectural forms (simple leaf ornaments).

Second Year.—Copying of more ornate examples; studies from nature; attempts at making ornaments for given spaces.

Third Year.—Designing of ornament with figural accessories.

(b) *Figure Modelling.*

First Year.—Identical with ornamental modelling.

Second Year.—Studies from the antique; single members of the body; masks.

Third Year.—Studies from the living model; decorative figures.

8. *Wood-carving.*

9. *Metal-working.*

10. *History of Art.*

11. *History of the Technical Arts.*

12. *Anatomy.*

The distribution of hours for the instruction of the several classes of the professional schools is established by a special schedule.

Admission to the school implies an age of fifteen years; good moral character; satisfactory elementary acquirements in drawing or modelling; if possible a year's experience in practical work; credible proofs of capability, or, if the director requires it, the passing of an examination, and the consent of parents or guardian; it is also necessary to have successfully gone through the preparatory school to enter the professional school. Women are not admitted.

Young men, who wish to follow only single branches of the preparatory or professional courses, may, if possessing sufficient preliminary knowledge, enter the school as special students. Dues, which must be paid in advance on admission, are: 10 marks per term for Bavarians, 18 marks for foreigners, 27 marks for specials. On no condition will the money once paid be returned.

II. ARRANGEMENT OF CLASSES.—AMOUNT OF TIME PER WEEK.

Preparatory School.

	Hours.		Hours.
1. Linear Drawing	6	2. Ornament Drawing	8
2. Descriptive Geometry	6	4. Modelling	8

(In the summer term—*Architectural Drawing.*)

Total, 28 hours. Hours reserved for problems, 8.

A. School of Architecture.

CLASS I

	Hours.		Hours.
1. Theory of architectural forms	12	3. Ornament drawing (elementary) ..	12
2. Shadows	6	4. Modelling (elementary)	8

In summer—*Practice in effects of light and shade.*

Total, 38 hours. Hours reserved, 8.

CLASS II.

	Hours.		Hours.
1. Architecture (with lecture)	10	4. Figure drawing (casts)	8
2. Perspective	4	5. Modelling	8
3. Ornament drawing (with lecture) ..	6	6. Flat painting	6

Total, 42 hours. Hours reserved for tasks, 4.

CLASS III.

	Hours.		Hours.
1. Architecture	10	4. Figure drawing (living model) ..	12
2. Ornamental design	6	5. Modelling	6
3. Decorative painting	8		

Total, 42 hours. Hours reserved for tasks, 4.

B. School of Modelling.

CLASS I.

	Hours.		Hours.
1. Theory of architectural form (with lecture)	12	3. Modelling (elementary)	10
2. Shadows (construction of)	6	4. Ornament drawing (elementary) ..	12

In summer—*Practice in effects of light and shade.*

Total, 40 hours. Hours reserved for tasks, 6.

CLASS II.

	Hours.		Hours.
1. Architecture (with lecture)	6	3. Ornament drawing	6
2. Modelling of ornament or of the figure	12	4. Figure drawing (casts)	8

Total, 32 hours. Ten hours reserved for modelling, specially for such pupils as wish to model simultaneously from the antique.

CLASS III.

	Hours.		Hours.
1. Modelling (ornamental; figure) ..	14	3. Drawing from the living model ..	12
2. Ornamental designing (drawing) ..	6		

Total, 32 hours. Hours reserved for modelling, 14.

C. School of Decoration.

CLASS I.

Hours.	Hours.
1. Theory of architectural form (with lecture) 12	3. Drawing of ornament (elementary) 12
2. Construction of shadows 6	4. Flat painting 10
Total, 40 hours. Hours reserved for special tasks, 6.	

CLASS II.

Hours.	Hours.
1. Architecture (with lecture) 8	4. Figure drawing (casts) 12
2. Perspective 4	5. Decorative painting 10
3. Ornamental drawing 8	
Total, 42 hours. Hours reserved for decoration, 4.	

CLASS III.

Hours.	Hours
1. Ornamental designing (drawing) 6	3. Studies from nature (portrait drawing, etc.) 6
2. Decorative painting 16	4. Drawing from the living model . . . 12

Hours reserved for ornamental designing, 6.

Hours.
<i>History of Art</i> for all the pupils of the first professional classes 1
<i>History of the Technical Arts</i> for all the pupils of the second professional classes . . 1
<i>Anatomy</i> for all the pupils of the third professional classes 2

III. OBSERVATIONS CONCERNING THE MEANS OF INSTRUCTION USED, THE MATTERS TREATED AND THE PEDAGOGIC METHODS APPLIED.

I.—Auxiliary Branches.

Linear Drawing.—One term : simple geometrical patterns (flat ornament as far as projection of the same on spherical surfaces), from sketches of the teacher on the blackboard (12 plates per scholar).

Descriptive Geometry.—From the projection of the point to the isometric representation of bodies, from sketches by the teacher on the blackboard. Models of the imperial Austrian museum for art and industry (16 sheets per pupil).

Architectural Drawing.—One term : from profiles to the Ionic order, exclusive, from blackboard sketches based on Laurey's work (6 to 8 sheets per pupil).

Construction of Shadows and Theory of Lights.—Construction of shades and shadows and simple bodies ; construction of the so-called normal sphere and its application to spherical figures, with particular reference to the forms of antique vases, and the forms created by turning wood and metal (10 to 12 sheets per pupil).

Perspective.—From the rudiments to the representation of bodies with their shades and shadows. Quite an original idea of this department is to require the pupil to make a free-hand drawing of an object and afterwards an instrumental perspective diagram showing the same view, and demonstrating the reasons for each fact of the free-hand perspective (6 to 8 sheets per pupil).

II.—Architecture.

First Course.—Theory of architectural forms, with lectures and sketches on the blackboard. Profiles and order of the Greeks, Romans and Renaissance, with exercises in drawing the same. The best of these drawings are reproduced, and the impressions distributed among the other participants of the course (5 to 6 sheets per pupil). In the "reserved" hours, simple architectural details and *ensembles*, mostly of furniture, are drawn by the pupils from sketches of their own, with shadows, full-size profiles and sections (4 to 5 subjects on the average are treated by the pupils).

Second Course.—The pupils, according to their varying degrees of preparation, work on special examples and orders, with application of the same to designs, principally with use of photographs. They treat the decoration of rooms, with ceilings, paneling and furniture, then make detail studies of highly ornate capitals, bases, etc. These sheets are shaded and, when possible, treated in color (3 works per scholar).

III.—Ornament Drawing.

Preliminary Course.—All drawing in this course is from plaster casts. Course of instruction—historical, beginning with Greek and Roman examples, then taking up Mediæval and Renaissance ornament. Principal object aimed at—correct reproduction of outlines and effects of light and shade. Materials—pen and pencil; occasionally black and white chalk or the brush. As a rule the pupil is expected to finish *one* such ornament per week. Drawing from the round is practised in this course according to geometrical bodies, taken from the models of the Union Centrale.

First Course.—Continuation of studies from plaster reliefs, with the most thorough execution possible, as regards effects of light and shade. (An average of 10 sheets per pupil.)

Second Course.—Instead of attempts at independent designs, it is found necessary to resort to copying. About twenty-four drawings are made on the blackboard by the teacher, which, being broad and simple in their treatment, demonstrate the most essential characteristics of the different styles of ornament. Through the imitation of these, the technique of simple representation is developed in the pupils.

Third Course.—Attempts are made in designing ornaments or art-industrial objects. (An average of two or three works per pupil.)

IV.—Decorative Painting.

First Course.—Copying of flat painting from the works of Racinet, Fischbach, and Malerjournal (Painter's Journal), on canvas, with glue colors.

Second Course.—Commencement of painting from ornamental plaster-models; first monochrome, then monochrome with gold or other colors.* Hereupon follow studies from grouped compositions of architectural fragments, vases and draperies on patterned backgrounds; copying of colored ornaments, full size, from studies and blackboard sketches by the teacher; also studies in color from living flowers and fruits.

Third Course.—Single panels, friezes, and corner-pieces, are put into colors from photographs (mostly *motifs* from the Italian Renaissance), or they are designed independently, and all are executed with glue colors, size of execution. Towards the end of the summer term, attempts are made at distemper fresco-painting. Pupils execute, on an average, five to six large studies, embracing several square metres, as well as a number of smaller tentative sheets.

V.—Figure Drawing.

(a) *From Plaster.*—Contours of busts, round figures and reliefs on a smaller scale; later on, they are most of them slightly shaded with pencil or crayon. The idea of this exercise is to force the pupil, by drawing as *much* as possible, to quickly seize the characteristic lines of an object. For special study, single parts of the body, hands and feet, also mostly on a diminished scale, are drawn with strict accuracy; also single figures and busts, part of them full size. (Crayon drawings.) (6 to 7 sheets per scholar.)

This instruction is followed either one or two years, according to individual capability.

(b) *From the Living Model.*—Studies of pose, drawn mostly with pen or pencil, 40 to 50 centimetres high. Each pose stands from 12 to 16 hours. Studies of heads, mostly in charcoal, and studies of drapery.

VI.—Painting from the Living Model.

VII.—Modelling.

(a) Ornamental.

Preliminary Course.—Rudiments, eggs and darts, rosettes, palms, various mouldings, single leaves from plaster casts or photographs. (10 to 15 sheets per pupil.)

First Course.—Copying from plaster-casts. (Parts of Italian Renaissance ornaments and architectural details.) (8 to 10 drawings per pupil.)

Second Course.—Continuation of copying from more ornate examples, principally from photographs and engravings. In the summer term, studies from living plants. The better works are cast in plaster, and copied by the pupils.

*The instructor says: "Very little" attention is paid to the theory of color. "It is apt to lead too far." It should be said that the colored designs shown are harmonious, and would compare favorably with English productions which are made under the influence of the theory.

Third Course.—Attempts at the independent execution of ornaments, with figural accessories, for given surfaces; mostly from sketches by the teacher, or suggestions obtained from photographs, with particular reference to their applicability to industrial objects; picture-frames, ornamented balusters for carving in wood, friezes with festoons and cartouches for stucco-ornament, fruit-dishes, tankards, pitchers, cups (for chasing), plates, stove-tops (for majolica), capitals, lions' heads, masks, keystones, etc. One term is devoted to the execution of these objects.

(b) *Figural.*

Second Course.—Copying from the antique, parts of faces and masks; busts, partly enlarged, partly reduced; torsos and reliefs. For the more advanced, statues, statuettes and groups. An average of 6 works per pupil.

Third Course.—Studies from the living models. Each pupil completes on an average 6 poses (round or relief); 6 studies of heads (full-size busts); 2 studies of heads (relief); 2 studies of draperies (round).

Besides the above, competitive problems are treated in the reserved hours of this course. Sixteen objects of the pupils' own choice, partly compositions, have recently been executed in the course.

VIII.—Wood Carving.

Copies from plastic examples and from drawings; several ornamental friezes, highly ornate balusters, lions' heads, medallion busts, studies in drapery and picture-frames were executed.

IX.—Metal Working.

Practice in making incised ornament on brass plates, exercises in chasing and cutting borders, friezes, clasps, chased panels, etc.

X. and XI.—History of Fine and Technical Art.

Course lasts two years, one hour per week. The following subjects have been treated in one winter term, with reference to illustrations: the architecture and sculpture of the Hindus, Egyptians, Persians, Greeks and Romans, with particular reference to the art-industrial achievements of these nations. (Collection of the Bavarian National Museum.) In the summer term: history of the technical arts, with demonstrations in the collections of the Bavarian National Museum. (1) Textile arts: weaving, embroidering, paper-hanging. (2) Lacquer-work. (3) Enamel, according to its various modes of fabrication and application among the various nations of antiquity up to the present time. (4) Mosaics and glass-staining.

In the summer term tentative and not obligatory lectures of one hour's duration on "the theory of vessel-forms" has been established, wherein the principles of form with reference to special *techniques* and materials are discussed, and illustrated by drawing and photographs. Particular stress is laid in this practice on the pupils drawing the most characteristic elementary forms and types found in this section of art from sketches on the blackboard by the teacher, partly as practice in sketching generally, partly to enrich the knowledge of forms of each particular pupil.

XII.—Anatomy.

(2 hours a week.)

In the winter term, osteology, with demonstrations on a skeleton; in the summer term, myology (science of muscles). As material of instruction, use is made of the atlases of Albin, Henke, Roth and Fau, also plaster casts of preparations, and copies of such, among them Roth's muscle-man.

SCHOOL OF INDUSTRIAL ARTS, GENEVA.

This school has been recently established and is designed as a continuation of the municipal school of art applied to industry. Its costly building (800,000f.) and appliances have all been designed to give practical instruction related to various industries, principally ceramics, enamel painting, art bronzes, etc., which are not only designed but produced at the school where the finished works are kept on sale. The *motifs* are the same as employed by the German schools in engravings, lithographs and photographs of prevailing styles.

The administration of the school is intrusted, under the control of the Council of State, to the commissioner of surveillance.

Instruction is gratuitous.

The pupils are *regular scholars and day scholars*.

Regular scholars are those who aim at a complete artistic education, or who undergo the apprenticeship of a special branch. They alternatively follow the lessons indicated on the programme of studies, and engage in the practical execution of works belonging to the profession which they intend to adopt. They alone have the right to participate in the regular competitions of the school.

To be admitted as a regular scholar, it is necessary to be at least 14 years old, to be in possession of a diploma from the municipal school of art applied to industry, or to pass an examination proving equivalent knowledge.

The *day scholars* (apprentices, workmen, or industrials) must indicate, when registering, the hours which they desire to devote to studies or to the execution of work, as well as the nature of the latter.

As day scholars are admitted such industrials as can furnish proof of the possession of sufficient preliminary knowledge to enable them to follow profitably the instruction given in the school, and as can show the aptitudes necessary for the execution of works.

When there is occasion to offer a division of money for executed works which have found a sale, this remuneration must be sanctioned by the commission of surveillance, on the preliminary advice of the director. It can, in no case, be decreed before the school has received the price of the objects sold, and a deduction has been made for the cost of manufacture. During the year, competitions are organized.

PROGRAMME OF STUDIES.

- (a) Modelling and sculpture ; figure and ornament.
- (b) Low and high relief in metals.
- (c) Ceramics, and their various applications.

The object of these studies is to lead the way to the following industries:

1. Decorative sculpture for buildings;
2. Moulding and retouching in plaster;
3. Finishing stone surfaces ;
4. Wood-carving ;
5. Artistic goldsmith's work ;
6. Art bronzes ;
7. Artistic wrought-iron ;
8. Enamel painting, decorating on white porcelain and faience, and on common faience.

Studies are made from the living model, the plant, plaster casts and engravings. Special importance is given to the class in ceramics. It is open every day from 8 a. m. to 12 m. ; and from 2 p. m. to 6 p. m.

It embraces the following studies:

- (a) Painting on faience and porcelain, decorative applications on pastes, enamels, biscuits, majolicas, etc.
- (b) Design, modelling and composition from nature.
- (c) Study of styles, monograms, blazonry and decorative forms (vases, cups, plates, etc.), architecture, exterior and interior decoration.

CONCLUSION.

There are many other schools which might be described, and something learned from each, as they are by no means all conducted in the same way. These are, for the most part, exclusively for men. There are, however, various schools devoted to young women, as the *École Moyenne-professionnelle de demoiselles* of Liege. The last exposition at Brussels showed the works of a number of provincial schools which seemed specially designed to benefit local manufactures. The process of manufacture is often illustrated ; as, for instance, schools that teach pupils to design woven fabrics are supplied with looms. The knowledge thus gained enables the pupils to make designs that can be worked practically.

As a contrast to the rigid English system, which has been well illustrated in this country, might be cited several continental schools. One of the most successful Parisian evening schools maintains quite earnestly that their excellent work is *not* the result of *system* but of *continual practice*, working three hours five nights a week, and sometimes Sunday.

VALUE OF INDIVIDUALITY IN ART WORKERS.

It is important that instruction should consider individual needs as far as possible, because we shall thus lessen the labor of acquiring the knowledge which may be applied to particular professions, and shall preserve individuality, the life of all variety in art. The Munich school is a notable example of the care taken in this respect. The importance of realizing these truths is impressed by the fact that they mark the principal difference between our methods and theirs. These schools have been undoubtedly the means by which workmen have been developed, who, to-day, stand pre-eminent in those manufactures which, from their stamp of artistic beauty, find a market the world over.

It may be said, when it is asked that these schools be established, that we have no demand for the workmen which they would produce. We have only to point at the list of trades represented in the Munich school to show that every one is represented in the large cities of this country. From force of custom our workmen in these trades do not realize the necessity of having the education received by their fellow workmen across the water. The result is that the representatives of various trades are without that foundation knowledge which will secure ultimately their broadest development.

The taste of our people has made such a marked advance in a few years, that a decided increase in demand has taken place for those articles which lend refinement and beauty to our surroundings. This means, as is well understood, increased importation. An expensive way to satisfy the demand, but one which will not permit the most wide-spread benefits to all classes. With the increase of workmen who can create these objects of beauty in our own country, and the consequent decrease in expense, we shall see their wide-spread use.

That a decided and permanent interest in art matters has arisen cannot be doubted. Looking at the matter in a purely business light, we see the necessity of providing the means which will satisfy this interest.

Something has been done already. We have schools devoted to modelling, designing carpets, etc., but their aim is decidedly too narrow. We must have schools which will influence a wide range of professions.

Munich, with its 169,000 inhabitants, has the magnificent school which has been described, while Boston, with 375,000 inhabitants, still lacks a similar institution. It is true that we have the Normal Art School, but it must be remembered that its exclusive aim is to train teachers of drawing for the public schools. It cannot have, therefore, the direct influence of the schools described.

NEED IN THE UNITED STATES OF ART POLYTECHNIC SCHOOLS.

A school must be established where carvers, stone-masons, joiners, metal workers, locksmiths, decorators, bookbinders, lithographers, painters, wood engravers, jewellers, paper-hangers, designers, etc., etc., may have an opportunity to practise those studies which shall be *directly* beneficial. When this is done we may hope to see our local work increase in those qualities which attract our attention in foreign productions; then we shall rapidly realize the desires of those who first interested themselves in developing art education in this country.

Admitting the necessity of industrial art schools, we are at once compelled to consider the difficulties which surround new enterprises.

First, and most important, it will be necessary to enlist the sympathy and practical help of leading men in the trades, which will be benefited. This, undoubtedly, would be best performed by individual work. We cannot doubt that there exists a desire to improve our manufactures, and, as in every public movement, a few earnest people are necessary to lead the way. The history of the Munich Industrial Art School, as the result of a society's work, commencing modestly with seven pupils, gradually developing to its present great importance, is not without its suggestions.

SUGGESTIONS FOR A SOCIETY FOR PROMOTING TECHNICAL INDUSTRIAL ART TRAINING.

At first thought it might seem best to work out this idea under the control of some of our existing societies, but there is no society existing whose members represent widely enough the industries which would be benefited. It is important, therefore, to make it the special object of a society unhampered by foreign surroundings and having a single aim.

If such a society should become the means of presenting lectures on industrial subjects, publishing works, multiplying copies of objects of art, forming an easily

accessible art library and the development of an industrial art school, it would do a work well worth the trouble which the creating of it might cause. We are fortunate in being able to profit by the experience of Europeans, but while a study of their schools and methods will be beneficial, it must not be thought that a complete copying of any one is advised, but with the experience which we have already had with English methods, and that which we may learn of the continental, we have abundant material to guide us towards the forming of a school which shall specially adapt itself to our needs.

Whatever is done in this direction, it is important that plans should be adopted which will attract the workman and make him feel at home in the school. That there exists a large class who would attend such a school, is in part shown by the large number of students representing various trades, who, every winter, throng our evening drawing schools. They represent a class, some of whom would gladly accept a broader opportunity to perfect themselves. In seasons of depression of business, such a school would afford an opportunity for the improvement of time which might otherwise be wasted.

The advantages which such schools offer should interest our people in their establishment. Especially is such a school needed in Boston, containing, as it does, such a variety of manufactures demanding art knowledge.

While pointing out the desirability of such a school, we should not lose sight of the necessity of museums as adjuncts to the schools.

Happily, owing to the public spirit of certain Bostonians, we have already the beginning of an art museum, which should not only educate the public, but specially our art workmen; for, in this way, are its treasures to be made practically available.

The teaching of drawing in the public schools, the forming of museums, and the establishment of industrial art schools to make practical the teaching of both, are the means employed to foster industrial art education in other countries. By adopting the same means we may hope for similar results, and our establishment on the same footing as the industrial countries of Europe. Then we shall see less of our wealth crossing the ocean, and possibly the tide of importation may so turn that the people of other countries will gladly give us their wealth for *our* art productions.

CHARLES M. CARTER.

BOSTON, Jan. 1, 1883.

APPENDIX V.

PAPERS RELATING TO THE VIENNA UNIVERSAL EXPOSITION OF 1873.

- I. Introduction.
- II. Extracts from Official Reports by the English Commissioners.
- III. Extracts from the Official Reports by the Commissioners sent
by the State of Massachusetts.
- IV. Extracts from the Austrian Official Reports.

APPENDIX V.

PAPERS RELATING TO THE VIENNA UNIVERSAL EXPOSITION OF 1873.

I.

THE VIENNA UNIVERSAL EXPOSITION OF 1873.

INTRODUCTION.

In view of the striking object lesson afforded by the architectural triumphs seen in some of the buildings of the Columbian Exposition at Chicago, culminating in the grand Coup d'œil of the "Court of Honor" to the splendor of which all were constrained to do homage; it will be easy for those who, also, recall the lessons of the Centennial, and who have taken note of the influence upon the architecture and the art of America, fairly attributable to that wonderful revelation of beauty then first made to so many thousands of Americans, to accede to the propositions advanced by Professor Archer, in the opening paper of this Appendix, concerning the potent influence of these great Worlds Fairs.

The Universal Exposition at Vienna,—which preceded the Philadelphia Centennial by three years and the Exhibition at Chicago by just twenty years,—was eagerly studied by Americans; who were alert to seize upon its lessons in view of the experiment of an International Worlds Fair which they were about to inaugurate in the United States.

It is of interest to see how this Vienna Fair was regarded by the English people who had themselves first set the countries of the world upon creating the series of brilliant world events in these peaceful contests of Industry, which have since added so much to the general happiness and to the knowledge of mankind.

The value and significance of such occasions is shown by the eagerness with which the different governments send their ablest masters in the several arts, sciences, and industries, to make, each in his special department, careful studies and full reports.

From the English Reports brief extracts, showing the value of these Exhibitions in their influence upon art industries, are here given; with a summary, showing how from these vast stores of rare and precious articles, the nations enrich their museums.

It is significant that only two museums in the United States made any purchases; these were the Museum of Fine Arts, Boston, Massachusetts, and a "Carolina museum," place not given. The Boston museum expended about \$480.00 and the Carolina museum \$20.00. A fact of greater significance is that, while eighteen countries of the world showed Art Treasures which other countries eagerly purchased to enrich their own museums, it does not appear that anything shown by the United States was thus bought by the museum authorities of other lands.

The State of Massachusetts, already in 1870, aroused to the necessity of giving to her citizens additional facilities for acquiring industrial art education, appointed a notable Board of Commissioners, under the leadership of one of her most famous citizens, the Honorable Charles Francis Adams, formerly Minister from the United States to the Court of Saint James, and including both leading Specialist, and Artizan, Commissioners, to visit and report upon the Universal Exposition at Vienna. From these valuable reports a few extracts are taken which comprise the second paper in this Appendix.

The third paper here given, consists of extracts from an Official Report made to the Austrian Government; and has direct reference to popular art education.

It is introduced by an admirable preface written by the late Mr. Charles B. Stetson, one of the ablest and most enthusiastic promoters of the new movement for industrial art training in Massachusetts, whose excellent report upon industrial drawing as shown at the Centennial Exposition in Philadelphia, is one of the papers included in Appendix "E," to Part I of this Report. (*See Part I, page 633 et seq.*).

If in the Austrian Professor Langl's criticism of some of the exhibits of American work in drawing, there be found judgments the reverse of commendatory; few American educators would now hesitate to agree with his conclusions, or to reject his warnings as to what was to be avoided, and what to be encouraged, in any attempts to secure valuable art instruction.

INCREASE OF FACILITIES IN THE UNITED STATES FOR TRAINING IN ART SINCE 1876.

While there is still abundant room for improvement and we are very far from having any adequate universal art training,—or even satisfactory training in elementary drawing in each of the public school systems of the several States of this Union; yet no one interested in this movement can fail to recognize that an immense advance in extending such facilities has been made, in many localities, during the twenty years that have elapsed since those judgments by the Austrian Professor were rendered; and at Chicago, in 1893, it was shown that in Art, in Architecture, and in Artistic Industries, numbers of American Architects, Artists, and Artizans, were entitled to equal rank with their foreign competitors. It was in the art qualities of the buildings, and of the art work exhibited, that the remarkable artistic development of the nation since the days of the Philadelphia Centennial Exposition, was to be most clearly traced. No one could study the American Exhibits and look on the Exhibition buildings, without joy in the performance and in the promise shown by many American art workers.

It was not chance that led to the excellence here shown by American Architects; but it was the legitimate result of the direct efforts of some large minded Architects, for now nearly a quarter of a century, to elevate their guild into a learned profession; by insisting on the thorough technical and artistic training of students of Architecture.

The history of this movement by the Architects of America, is full of interest and of encouragement to all who hope to accomplish valu-

able results by means of elementary and higher technical industrial art training, in other departments.

The details of this educational movement by the Architects, from its inception to the present time, will be given in a subsequent volume of this Report.

To one who recalled the few facilities for any form of Art Education, shown at the Centennial; the exhibits made at Chicago by institutions for training in all forms of artistic education, including schools for industrial, elementary, technical, and the Fine Arts, were a revelation; showing a surprising growth, not only in the number of schools but in the quality of the work shown. Several of the most excellent and promising of these new institutions have been established *directly* in consequence of the Philadelphia Exposition, and most of them indirectly. In view of work shown by some of the "Art League," and "Fine Art," schools, it no longer seems a necessity for the student painter or sculptor, to cross the Atlantic; nor, even, to come to the Atlantic seaboard,—St. Louis, Cincinnati, Chicago, not to name other enterprising western towns and cities, each possessing all requisite facilities for giving thorough training in the *technique* of sculptor or painter.

Interesting comments by French and Italian authorities, concerning the Architecture, the Art, and the exhibits of drawings in schools, shown at the Columbian Exposition, in 1893, will appear in the forthcoming Annual Report of the U. S. Commissioner of Education, for 1892-1893.

II.

EXTRACTS FROM REPORTS BY THE ENGLISH COMMISSIONERS TO THE VIENNA UNIVERSAL EXHIBITION OF 1883.*

ON THE INFLUENCE OF INTERNATIONAL EXHIBITIONS AS RECORDS OF ART INDUSTRY.

By Professor T. C. ARCHER, F.R.S.E., F.S.A.S., President of the Royal Scottish Society of Arts, Director of the Museum of Science and Art, Edinburgh.

Industrial Exhibitions, and especially International ones, must now be looked upon as established institutions amongst civilised nations. They may undergo important changes, but they will go on, for with all their shortcomings and defects they have worked great good, not merely by increasing the material wealth of the world, but especially in diffusing principles of good taste amongst the masses in all countries where they have been held. It is not an extravagant assertion to make, but the two great Exhibitions of 1851 and 1862, and the admirable local Exhibition at Manchester in 1857, have done more to elevate the national tastes in Great Britain than all the school and book training put together. But it is not intended to assert that this enormous good has been attained by the simple fact that hundreds of thousands of people visited those Exhibitions, and saw and appreciated the treasures displayed there; on the contrary, it is most likely that had no other influence been at work than that which drew the crowds to our Exhibitions, it would hardly have extended beyond the short periods when they were in progress. But these displays produced an upwaking of latent tastes in the people, and what was still more effective, the emulative spirit of those who catered for the public was stimulated, and a race was commenced which will not soon terminate. Already the extreme ugliness which marked the attempts at deco-

*Reports of the Vienna Universal Exhibition of 1873, Part III. Presented in both Houses of Parliament by command of Her Majesty. London: Printed by George E. Eyre and William Spottiswoode, Printers to the Queen's most excellent Majesty. For Her Majesty's Stationery Office. 1874. Price 6s. 3d.

ration of our pottery and porcelain, glass, metal-work, &c., at the commencement of the second quarter of the present century, and which called forth the pity, if not the contempt, of our neighbours, has passed away; everywhere may be noticed the dawns of genuine taste, and in numerous instances a progress which places us on a level with foreign competitors. This is due to the fact that the Exhibitions have proved to be great schools in which object-lessons on the grandest scale have been taught to millions of people. The love of beauty is innate, and even individuals in whom it has never before been aroused, rarely fail to see the difference between similar objects, which have been well or ill decorated; therefore such persons in our exhibitions learn to appreciate the good, both in industrial and decorative art, and demand improvement from those who administer to their wants. These again see in the *excellencies*, or defects, of their fellow-exhibitors, their own strong and weak points, and are stimulated to still further improve the former, and to cure the latter.

THE NEED FOR SCHOOLS AND MUSEUMS OF INDUSTRIAL ART.

If such are the effects of the International and local Exhibitions, it is clear that there should be some schools in which artists and manufacturers can take lessons, for however capable they may be of self-improvement, the progress is too slow for the demand. It follows then that the repositories of good workmanship and the best designs should be within their reach, not that they may assist them to copy, but that they may study, and learn the excellencies of those whose works have earned them the honour of being so preserved, and without altering the flight of their own genius, render it brighter by light reflected from the productions of their predecessors. Under the beautiful skies of Greece and Italy, objects of beauty could be placed in the open air, and all could see them, hence museums were not necessary, but what Nature kindly preserved, social revolutions threw down, and too often destroyed. The dry soil has been our friend, and the fashion of burying beautiful ornamental work with their dead has also preserved vast numbers, which the instincts of modern civilization have taught us to collect and preserve in museums, which thus become repositories of the precious æsthetic culture of past ages, and the training schools for future ones. The idea of preserving such treasures in museums has undergone a great change since 1851, and as it was then perceived by those who so wisely managed that great affair, that thousands of the best ideas which there had development, had been derived from the study of museum objects of a class which were not then in much favour in museums, the time had come for paying more attention to decorative art apart from mere antiquity, or its historic teachings, and also that the works of the handicraftsmen, if worthy, should be used to stimulate and teach others. The South Kensington Museum therefore sprung into existence, and when this transition period has passed and its jealousies and opposition, have, with its errors of management passed into oblivion, Great Britain will be proud of it as of any institution she ever possessed. It is a grand Artesian well, which has pierced through the thick strata of ignorance, and dullness to Art, and although from the newness of the borings, the water has run somewhat muddy, it will ere long, unless mischievously choked, pour a clear and pure flood of refinement and taste over the length and breadth of the land. With a Prime Minister who has a passionate love for the beautiful in Art, whether he holds the purse-strings or not, we may be sure, if angry passions will drop into repose, and a fair allowance be made for the other exigencies of the state, that the new era of Art-progress will receive fair encouragement, and will produce rich fruit. And should we ever hold another Great Exhibition, which is by no means unlikely, for the decennial evidently pleases the world better than the annual, there will be a progress shown in all branches of Art and manufactures which will give ample cause for national pride and exultation.

ART MUSEUMS SHOULD BE THE PERMANENT DEPOSITORIES OF THE BEST EXAMPLES OF ART WORK SHOWN AT THE WORLDS FAIRS.

The Exhibition proper being thus a diffuser of artistic and industrial knowledge on a grand scale, museums, should become the repositories to a large extent of those objects which can be made the means of extending such lessons, and thus aid the artisans upon whose skill and industry future Exhibitions have to depend.

In no country is this use of museums more striking than in Great Britain, for the natural result of our commercial prosperity is to create numerous purchasers who eagerly explore exhibitions in search of objects on which they expend large sums, and withdraw them from the public to decorate their own dwellings; without muse-

ums therefore Art-students would have very slender chances of studying from examples, and this would of course cause a dearth of novelty in designs, which would soon deteriorate the public taste and render exhibitions less valuable. These remarks apply most especially to that now numerous class of museums at home and abroad, which have actually sprung out of the International Exhibitions, chief amongst which and also the first in point of time, is, as before mentioned, that of South Kensington, which started into existence immediately after the Great Exhibition of 1851, and was at first stocked chiefly with its acquisitions therefrom. Fortunately from the very first that grand establishment has been directed with great energy and consummate skill, and its influence on every Exhibition held in Europe since its commencement has been very striking. Two features in the management of South Kensington have been especially beneficial, viz, the Loan collection and the system of collecting reproductions of such art-objects as could not be otherwise obtained. By the first of these private collectors are induced to lend freely for the public benefit what would otherwise be producing only a comparatively small amount of good, the art-student is presented with an endless series of the finest examples; and the public taste is elevated by the display of collections so rare and valuable that even the public purse would be unable to procure them for the nation. The system of procuring reproductions of original and unique objects gives a splendid opportunity for stocking the art-schools with such examples as could only otherwise be studied in distant countries, at great expense of time and money, neither of which as a rule are abundantly at the disposal of those who are real workers. In Great Britain, besides South Kensington, and Bethnal Green, the Government has also established museums for similar purposes in Edinburgh, "The Museum of Science and Art," and in Dublin; and the municipal authorities in numerous centres are actively working in the same direction.

THE EXHIBITS SHOWN BY FRANCE IN THE WORLDS FAIRS ILLUSTRATE THE PRACTICAL VALUE OF THE FRENCH ART MUSEUMS.

France has long made her museums so thoroughly practical that no necessity has been caused for a change by the institution of exhibitions; her students are richly supplied with every branch of art, and technical examples, in convenient museums where every available facility for study is secured for them, and well they know how to use them. In the wealth of beautiful designs which were countless in their great International Exhibition of 1867, those who were well acquainted with the collections of the Louvre, the Hôtel-Cluny, the Sèvres, and other museums, had no difficulty in recognising the teachings of those splendid schools of art; and doubtless many of the best features of the mechanical and other forms of technical ingenuity had been derived from that excellent institution, the Conservatoire des Arts et Metiers.

MUSEUM IN TURIN OPENED IN 1862.

Italy followed the example of Great Britain, and in 1862 originated what we may call an Exhibition Museum in Turin, under the able direction of the then Minister of Commerce, Commendatore Minghetti, and by the activity and talents of the first appointed Director, Chevalier Jervis, it rapidly obtained a considerable importance. It has, however, had to contend with the various difficulties which were certain to arise in such institutions by the removal of the seat of government to Florence, and to Rome.

MUSEUM OF RURAL ECONOMY OPENED IN RUSSIA.

Russia also felt the advantages which such museums give to the public, and the Industrial Museum, or Museum of Rural Economy, first under the direction of M. Tcherniaeff, and now of M. Solsky bears evident marks of having been formed upon English models. A large portion of it is devoted to the illustration of food, exactly upon the plan of the Food Museum of South Kensington, to which is added also the food of domestic animals, whilst the application of vegetable products, such as trees, their roots, seeds, barks, &c., are shown as in the Kew Museum. The animal products are also arranged on the South Kensington plan, and there is in addition a department for mechanical and engineering appliances for working the land, and for draining and other farming operations. This Museum has been founded since the Exhibition of 1862. The whole of the departments are on a grand scale, and the lessons taken from this country have been well carried out and greatly amplified. The building itself was formerly a riding school for the Imperial palace, and is one vast hall, 420 feet in length, 105 in width, and 35 in height, without a single pillar to support its plastered ceiling. It is under the government of the

Ministry of Crown Domains, and is intended to diffuse a knowledge of the sciences connected with the production and utilisation of the substances required for food, and with this view there are workshops and artisans connected with the establishment, who produce many of the smaller kinds of useful implements, &c., which are sold to *bonâ fide* farmers at a profit of five per cent. only. Free lectures are given in this Museum at certain periods, and readers of agricultural works are allowed the use of the library for that purpose, or rather a library is specially arranged for them on the tables, on which all the books of any value in the Russian language are laid.

A very considerable proportion of the specimens in this museum are purchases made at the English and French Exhibitions. In addition to this a museum of a more general character was commenced last year, in which the ornamental and industrial arts will be represented after the manner of our Industrial Museums. Many valuable purchases were made for it at the Vienna Exhibition this year. In Moscow last year (1872) a very extensive general International Exhibition was held with the object of establishing by its aid a Polytechnic Museum.

ANCIENT ART OF RUSSIA.

Moscow also has a small but admirably organized Art Museum, with school attached, which, under the able and energetic administration of M. Victor de Bontosky, has done good service not only to the cause of Slavonic Art, but also to that of International Exhibitions generally. Few who studied the Paris Exhibition in 1867 will have forgotten the extensive series of reproductions in stucco, coloured drawings, and designs, besides numerous antique examples, contributed by the Moscow Art School to the section devoted to the history of labour; whilst in the cases of the exhibitors, especially those of Sazakoff, Sapojnikoff, and others who exhibited goldsmith's work, textiles, and lace in the antique styles, ample evidence was afforded of the large extent to which the rich Treasury of the Kremlin and the other magnificent museums for Art Treasures in Moscow and Saint Petersburg had been studied in order to furnish beautiful designs for the modern Exhibition. The same remark applies to the Vienna Exhibition of the present year. Whether we take the works in precious metals, in porcelain, in pottery, or in glass, we shall find that all the best designs by the chief exhibitors are the results of studying those rich stores of Art which the Russian Emperors have, in spite of all troubles at home or abroad, gone on collecting and preserving in their palaces, which are now museums available to all who require to use them. We even notice with some regret that this industrious study of museums has been carried so far as to deteriorate their own beautiful natural Art by mixing with it ideas from other and not harmonious national styles of Art derived from specimens bought in the Paris and London Exhibitions.

MUSEUMS IN VIENNA.

It is intended that the new institution in Vienna (the Athenée) shall also be a great Industrial Museum, and receive the vast contributions which have been made to it from the Exhibition. Vienna had already established a magnificent Museum upon the South Kensington model. This latter, "The Imperial-Royal Museum for Art and Industry," is very rich in specimens obtained from previous Exhibitions, and Baron Schwartz stated in a public speech that its British specimens purchased in the London Exhibitions of 1851 and 1862 had proved of great importance and value to the art-students who used it. A similar and extensive one has been established at Pesth, and is said to be working great good by improving the manufactures of Hungary.

INDUSTRIAL MUSEUM IN LISBON.

Portugal is making great efforts in the same direction, and Baron Wildik, resident Consul for Portugal at Newcastle, has laboured assiduously for the last two or three years in this country to procure specimens for the Industrial Museum established at Lisbon under the direction of Cav. Fradesco, whose enthusiasm in behalf of his Museum cannot but be most beneficial.

EUROPEAN INDUSTRIAL AND POLYTECHNIC MUSEUMS.

Germany, Belgium, Holland, and Switzerland have for a long time past known the true value of museums, and especially those devoted to the industrial arts; hence few towns in those countries are without a good Polytechnic Museum in

which their artizans gain a knowledge of art and the processes of manufactures. They have benefited largely by acquisitions from Exhibitions, but they have not sprung out of them. The value placed upon such collections in Germany can be somewhat demonstrated by the translation of some notes on the collections in the Royal Württemberg Museum, which will be found in Appendix A, whilst the still more important one of Munich is fully described in a letter from its director, Dr. J. H. von Hefner Alteneck (Appendix B).

HOW MUSEUMS BENEFIT ENGLISH ARTISTIC INDUSTRIES.

In the question really before us, "What benefits do exhibitions gain from museums?" the best illustrations can doubtless be derived from the examples produced by our own country; that is to say, as far as our own impressions are concerned. Well then, let any one refer to the Inventory of Art Objects acquired for the South Kensington Museum in 1851, and he will see that a multitude of examples was accumulated which had their effect on our art-schools, and led to a great improvement in similar objects in the Exhibition of 1862, not suddenly, but through all the intervening years. At the period from which we started, our Ceramic Art had not attained even a respectable position. An abundance of similar illustrations of the effect of museum studies on our art-industries could also be cited from the Exhibition of Paris in 1867. This year, however, in the Vienna Exhibition, it is so striking that it is impossible not to be impressed with it. Take for instance, the magnificent collections of our potters and glass workers, and although there were no actual copies of museum objects, except in a few special cases, such as the exact reproductions by Messrs Minton's of the Henri II. ware, yet the effect of art-training in the schools attached to the South Kensington Museum was most remarkable. So too in metal work, in the designs on textile fabrics of all kinds, and very especially so in goldsmiths' work and jewellery, whilst it also made itself manifest in every variety of useful article upon which taste in design could be shown. It will always be a matter of deep regret that so little was done to secure for the museums of this country from the rich abundance of beautiful objects which could have been obtained in every department of the Vienna Exhibition. No nation could have reaped greater good from purchases judiciously made than we could, and yet nothing comparatively was spent. Messrs. Elkington's magnificent work, "The Poetry and Music Vase," the Worcester porcelain decorated by "Bolt," and several of the splendid productions of Minton's and Copeland, were of such a character as to make them of national importance as museum specimens, and to lose which will be a misfortune to the nation. Happily, there is in these firms a spirit of patriotism as well as of progress in art, and it is well known that for some of their finest things they refused foreign offers, preferring to keep them on their hands, rather than let them leave this country. Doubtful as this may appear, it is nevertheless actually the fact. The museum authorities of Austria, Prussia, Russia, France, Bavaria, Württemberg, and the United States of America all bought more largely of Art objects in the Vienna Exhibition than we did, and no Exhibition has yet been held in which so many advantages were offered to the purchasers of museum specimens, for it was richer than any previous one, and seemed to contain so much novelty of design, that it will be looked back to as an epoch in the modern Renaissance now in progress.

EAGERNESS OF EUROPEAN MUSEUMS TO SECURE CHOICE EXAMPLES OF ART WORK FROM VIENNA EXPOSITION.

The keen appreciation of this feeling amongst the continental collectors was particularly noticable, for before the Exhibition had been opened a week, there was hardly an exhibitor of art industry from one end of the vast building to the other, who had not got one, or more of his choicest objects ticketed as bought by the director of some museum. Ten thousand pounds would have been a small sum for Great Britain, but if well spent would have been a most profitable investment; several continental Governments spent more than a fourth of that sum, but hardly a thousand was spent by us. It is true our museums are not getting very rich, but many of the continental ones are quite as much so in such objects as are conducive to the real study of art, and certainly we have yet very much to do before we have a complete classified Art Museum, capable of giving the fullest information, and instruction to the student in merely industrial Art. It is to be hoped that our shortcomings in obtaining good examples from Vienna may not throw us back in the next Great Exhibition, wherever that may be, for these Exhibitions are bound to become points of observation on the great race-course of human progress, where the

contest is now so keen that no nation can afford to throw away the slightest advantage. What we have hitherto done in this respect has been of vast service, and we must hope that although we shall now have to pay higher prices for them, we may still obtain some of the best examples for our national Museums and Art Schools.

By the admirable foresight and excellent arrangements of the Secretary to Her Majesty's Royal Commission, Mr. Philip Cunliffe Owen, abundant and exact information respecting the acquisitions of the Museums of various countries has been obtained and will be found embodied in the following appendices which will prove of great value to those engaged in the information, or superintendence of public Museums.

APPENDIX A.

NOTES ON THE COLLECTIONS OF THE ROYAL WÜRTTEMBERG CENTRAL INSTITUTE FOR TRADE AND COMMERCE.

I. SAMPLE STORE OF INDUSTRIAL PRODUCTS.

The sample store owes its existence mainly to the attention which the Central Institute had to devote to trade and commerce at foreign Industrial Exhibitions. Although they set their technical writers to prepare the most exhaustive reports, which they spared no pains in circulating among the traders of the country, yet the influence that they were enabled to exercise by this means upon the national manufacturing centres was but small.

Quite a different result would, on the contrary, be produced if the improved foreign productions were introduced bodily under the eyes of the traders. This was evident at once when a quantity of exemplary work was brought from the French exhibition that took place in Paris in 1849, and set out for public inspection in the (then very contracted) locality of the Central Institute.

The interest that it excited exceeded all anticipations. His Majesty the now ruling King Carl, at that time Crown Prince, and his Royal Consort; and a few days later his late Majesty King William, visited this exhibition, and at once took under their especial protection the continuous extension of the collection of samples already initiated. The exhibition held at Leipzig in 1850, gave a further opportunity for promoting this extension. But before all else the necessary space had to be provided; and the Central Institute succeeded in getting, not only their necessary offices, but also some rooms for a collection of trade samples, in the Battalion Barrack, which was at that time universally considered as architecturally unsafe, and was therefore abandoned by the military authorities.

After this, when the First Universal Exhibition of Industry was held at London, in 1851, the Technical Councillor of the Central Institute, being on the spot in the capacity of Commissioner for Württemberg and member of the jury for the Zollverein, was empowered to make a series of purchases of the best goods illustrating every branch of Württemberg industry. This rich store was then made to supply especially the smaller manufacturing centres with improved and perfected tools and material, and further to set before the eyes of the trading public in general the precision, good taste, and solidity of foreign manufactures.

* * * * *
 Especial favour was found for the collections, initiated with the London purchases, of technical and decorative designs and means of instruction of every kind. A rich collection of instructive plaster casts was added to these for teaching drawing, and a school opened daily for advanced students of drawing; the directors of which were required to give special attention to the production of designs; to this has been joined very recently a workshop and central depository for the production and circulation of plaster casts for the drawing schools, which has published its own illustrated priced catalogue.

* * * * *
 The value of the historical sequence of designs and manufactures is appreciated and samples showing this are retained and classified in the museum. From the Industrial Exhibitions of Munich in 1854, and of Paris in 1855, many samples were received, as well as from many local exhibitions in the country. The sample store is opened on week days from 10 a. m. to noon and from 2 to 6 p. m. and on Sundays from 10.30 a. m. to 12.30 p. m. Entrance is free.

Loans from the collections are made to manufacturers, and temporary exhibitions are given in various localities, as desired. In short, every effort is made to disseminate full information to manufacturers and artisans throughout the Kingdom. The above statements are quoted from the "Regulations" published in Stuttgart, March 1st, 1867. These detailed statements forcibly illustrate the efforts made by the European governments to improve and develop the art qualities of their manufactures. It is from such beginnings and by such methods that the Art products of the trained workers of Europe have been developed to the beauty and perfection which won the admiration of all intelligent observers at the Centennial, in 1876, and at the Columbian Exposition, in Chicago, in 1893.

APPENDIX B.

DIRECTION OF THE NATIONAL MUSEUM OF BAVARIA.

Munich, 20th November 1873.

* * * * *

The National Museum of Bavaria, already projected by Maximilian II., in the year 1853, was founded in 1855, and owed its increase to the fact that the existing State collections, as well from the Royal Castles as from separate sources, placed at the disposal of the new institution their specimens of the productions of art and art trades, from the middle ages up to the time of Napoleon, in such quantity and importance that it took a prominent position among similar institutions. To these are added acquisitions from private collections, as, for example, from that of Ainmiller; the celebrated collection of Herr von Reider in Lueneburg, the collection of the Erlangen university, and similar donations from private amateurs; also acquisitions by purchase from churches and old curiosity shops. Some towns also supported the Museum in the best way, by presentation of objects of antiquity in their possession.

The financial subsidies which the State added, amount at this date to about 120,000 florins = 10,000 l. sterling; 27,000 florins are allotted for the current year to the National Museum of Bavaria, for the payment of its management expenses and the salaries of officials, and the increase of the collections by purchase.

THE PRACTICAL USEFULNESS OF MUSEUMS.

When the undersigned entered on office, considering that museums only fulfill their proper function when they become models and examples for contemporary fine art and commercial art productions, the Bavarian Museum was reorganized; first the objects in it were severely sifted and more clearly arranged and the chronological principle more exactly carried out, and then special departments were created for modern industry and art manufacture.

By this process the following subdivisions arose:

1. Collection of Armour and Costumes.
2. Collection of Iron work and Smith's art.
3. Collection of Musical Instruments.
4. Collection of Brazier's work and Bismuth Painting.
5. Collection of Staple samples and Woven goods.
6. Collection of Ceramic Art.
7. Collection of Ornaments in Wood and Metal for art works in wood, gold, and silver, &c.

MUSEUM BUREAU OF REPRODUCTIONS.

Afterwards, in order to procure good models for technical schools and the various art-trade works, a plaster of Paris workshop and photographic studio were established, and reproductions were made at a very low price, but of the best quality, and multiplied in so masterly a manner as to have attracted well-merited notice at the Vienna Exhibition. This effort of the National Museum of Bavaria to influence in the first place our schools and modern art-industries and trades, induced me to take the further step of incorporating with the collections of the museum important and prominent productions of modern art-industry. In this way the manufacturer

Giani in Vienna presented a collection of his stuffs from old patterns; the manufacturer Sältzer of Eisenach, a collection of his ceramic productions; the manufacturers Ebner and Gerdeissen, some of their samples of stuffs for ecclesiastical purposes, to the museum; and these are arranged along with the corresponding goods of earlier date. For the same purpose also, at the Vienna Exhibition, several purchases were made of similar modern productions of art-industry, only to a modest extent it is true, because we had only very inadequate means at disposal, and the Royal Government made us no further grant.

A. From the firm of Elkington, in Birmingham, we obtained:

1. The Milton shield.

2. Two salvers with the 12 months in galvanoplastic.

B. From the firm of Mintons:

Model of a vessel of Henri II.

Sundry tiles.

C. From the firm of Minton and Hollins:

An assortment of tiles.

D. From the firm of Salviati in Venice:

An assortment of Venetian glasses and the representation of Theodorich and Theodora, an ornament in glass mosaic from the church of S. Sophia.

E. From the iron works of Graf Slotberg:

The helmet of Francis I., a reproduction.

A garden is attached to the collections of the National Museum of Bavaria, in which principally stone monuments of various epochs have been set up, so that it forms another museum in the open air. By these means we find, in the National Museum of Bavaria, not only the whole of human activity of earlier times fairly well represented, but also the attempt to illustrate the connexion between the fine art and art-industry of times long past and modern efforts in the same field; and for these reasons its collections are utilised in the most satisfactory manner by manufacturers and traders in art productions.

With distinguished respect,

Dr. J. H. v. HEFNER ALTENECK.

APPENDIX C.

[Compiled for this Report by HUGH WILLOUGHBY SWENY.]

Abstract showing the Acquisitions, of which any record could be obtained, of Museums of Art and Industry by Purchases and Gifts, together with the approximate sums expended at the Vienna Exhibition of 1873.

PURCHASES.

Austro-Hungarian Empire:

	£	s.	d.	£	s.	d.
1. K. K. Oesterreiches Gewerbe Museum, Vienna.	3,106	16	0			
2. Handels Ministerium (Minister of Commerce), for Schools of Art in Austria	312	4	2			
3. Athenaeum Gewerbe Museum, Vienna	30	0	0			
4. Brünn Industrial Museum	90	6	0			
5. Först Hoch-Schule Mariabrunn	45	0	0			
6. Lemberg Museum, Galicia	30	0	0			
7. Cracow Museum	4	0	0			
8. Kunst und Gewerbe Schule, Carlsbad	198	4	0			

Hungary:

9. Reichenburg School of Industry, Bohemia	29	0	0			
10. Linz Museum	10	0	0			
11. Debreczin School of Industry	6	0	0			
12. Ungarisches Gewerbe Museum, Magyar Ipar Museum, Buda-Pest.	4,167	16	4	7,029	6	6

Belgium:

13. Musée d'Anvers. No further returns.

Brazil:

14. Rio Janeiro Museum	12	0	0			
15. Bahia Museum	10	0	0			

22 0 0

France:

16. Toulouse Museum	5	0	0			
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PURCHASES AT VIENNA OF ART OBJECTS FOR MUSEUMS. 833

	£	s.	d.	£	s.	d.
German Empire:						
17. Deutsches Gewerbe Museum, Berlin	3,160	16	0			
18. Königsberg Museum	15	0	0			
19. Bayerisches Gewerbe Museum, Nürnberg	2,037	15	8			
20. Bayerisches Gewerbe Museum, Munich	110	12	0			
21. Carlsruhe Museum	244	0	0			
22. Permanente Gewerbe Ausstellung, Hannover	214	17	2			
23. Cassel Museum	54	10	0			
24. University of Strasbourg	14	6	0			
25. Modellir Schule Dresden	34	0	0			
26. Hanan Museum	16	8	4			
27. Lubeck Museum	11	8	0			
28. Leipsic Museum	4	0	0			
29. Öffentlichen Sammlungen, Stuttgart	888	16	6			
30. Hamburg Museum	471	16	4			
31. Darmstadt Museum	3	0	0			
				7,281	6	0
Great Britain:						
32. Edinburgh Museum				1,104	10	2
Italy:						
33. Milan Museum	65	18	8			
34. Industrial Museum of Turin	16	0	0			
35. Florence Museum	3	0	0			
				84	16	8
Japan:						
36. Yeddo Museum. No full return.						
Russia:						
37. Musée Impériale de St Pétersbourg	423	16	8			
38. Musée de Moscou	174	4	4			
39. Helsingfors Museum	156	0	0			
				754	1	0
Sweden:						
40. Stockholm Museum				10	0	0
Turkey:						
41. Constantinople School of Industry				10	0	0
United States:						
42. Massachusetts Museum of Fine Arts, Boston	95	16	0			
43. Carolina Museum. No further return	4	0	0			
				99	16	0
Unknown Museums				57	0	2

The above statement of sums expended is followed by some thirty pages of "details of purchases made by and gifts to museums." These, though very interesting, must be omitted for want of space.

APPENDIX D.

Showing the Sales made by each country to the Museums of Europe, Asia, and America.

	£	s.	d.	£	s.	d.
Austria:						
Porcelain, Pottery, and Glass	840	12	0			
Leather work, and fancy ware	495	16	0			
				1,336	8	0
Denmark:						
Porcelain and Terra-Cotta	76	2	0			
Home Industry, Embroideries, &c	29	0	0			
Wire Work	1	12	0			
Japanned Ware	1	18	0			
Leather Work	3	10	0			
Jewellery	72	2	0			
				184	4	0
France:						
Textiles	37	4	2			
Machinery	16	0	0			
Works of Art in Metal and Enamels on Metal	2,033	18	4			
Ornamental Furniture	431	16	8			
Porcelain, Pottery, and Glass	1,329	19	8			
				3,848	18	10

	£	s.	d.	£	s.	d.
German Empire:						
Porcelain and Glass.....	318	0	0			
Jewellery	11	4	0			
Ironwork.....	1	0	0			
				329	12	0
Great Britain:						
Porcelain, Pottery, and Glass.....	1,618	3	0			
Works of Art in Metal Work.....	1,294	13	0			
				2,912	16	0
Indian Department:						
Pottery, Metal Wares, Embroidery, Jewellery, Fab-						
rics, Carved and Inlaid Wood and Arms.....				821	0	0
Greece:						
Plastic Art.....	600	0	0			
Jewellery and Costumes	85	0	0			
				685	0	0
Hungary:						
Pottery and Glass.....	96	0	0			
Costumes.....	55	0	0			
Woodwork and Parqueterie.....	30	0	0			
				181	0	0
Italy:						
Mosaics, Glass, and Stone	548	0	0			
Bronze and Metal work	445	8	0			
Jewellery	445	4	2			
Porcelain and Faience	120	0	0			
	248	15	10			
				1,807	8	0
Morocco:						
Jewellery, Timbuctoo Gold Work.....	153	0	0			
Old Moorish Embroidery.....	225	0	0			
Textiles	30	0	0			
				408	0	0
Persia:						
Drawings, Carpets "Hotam" Work, Ancient Vases						
and Curios.....				2,104	0	0
Portugal:						
Filigree Silver Work.....	91	0	0			
Plastic Arts.....	10	0	0			
				101	0	0
Sale were made to musums of porcelain and faience, but it was found impossible to obtain particulars.						
Russia:						
Metal Work, Silver, and Jewellery	629	12	0			
Bronze	121	0	0			
Glass.....	67	14	0			
				818	6	0
Spain:						
Leather Work	105	0	0			
Metal Work, Iron, and Steel	799	0	0			
				904	0	0
Sweden:						
Porcelain and Maiolica.....				3	0	0
Switzerland:						
Wood Carvings.....				30	0	0
Turkey:						
Iron Works.....	5	10	0			
Carpet	10	0	0			
Woodwork, Painted	10	10	0			
Cloth Work, Mosaic	25	0	0			
Pottery	13	0	0			
				64	0	0
Total.....				£16,539	4	10

Sales were made of Maiolica and Faience by Monaco, but no returns could be obtained.

III.

EXTRACTS FROM THE REPORTS OF THE MASSACHUSETTS COMMISSIONERS TO THE VIENNA UNIVERSAL EXPOSITION OF 1873.*

SELECTIONS FROM THE REPORT BY HON. CHARLES FRANCIS ADAMS.

As a universal exposition, that of Vienna was undoubtedly the largest and most ambitious attempt of the kind which has yet been made.

* * * * *

The consequent financial experience was very suggestive. The appropriation originally made by the government on account of the Exposition was \$3,000,000, which it was further provided was in no case to be exceeded. The total cost will probably be found to amount to over \$12,000,000, as the receipts from visitors were scarcely sufficient to meet the current expenses; leaving a deficit of some \$9,000,000 to be met by the Austrian government. And yet, even from this lamentable showing, it would not be safe to draw any inferences in disparagement of the Vienna Exposition as affecting the people of Austria, or of the Centennial as affecting the people of this country. The influence of such an experience cannot easily be measured in dollars and cents. On the contrary, there can scarcely remain a doubt in the mind of any careful observer, at all familiar with the progress of recent Austrian development, that the Exposition, even had it resulted in a deficit twice as large as that stated, would have been worth far more than it cost.

EDUCATIONAL IMPORTANCE TO AUSTRIA OF THE VIENNA EXPOSITION.

Its educational effects can hardly fail to be incalculable. The people of Austria intellectually, politically and industrially are in a state of active transition. The disastrous results of the campaign of 1866 drove the Empire into a course of decided political and educational reform. The absolute necessity of a reorganization was made apparent even to those most wedded to the old ways, and from the battle of Sadowa may be dated a new era in Austrian history. Seven years of education had made their influence perceptibly felt in every department of national life, and not least in its industries. There was a general awakening. Upon a people in this receptive condition the effect of a universal exposition like that of the last summer cannot easily be overestimated. It is probably not too much to say that for the next score of years everything inventive or industrial in Austria will date a new impetus from it, as everything educational and political already dates from Sadowa. Nor will the experience of Austria, if this expectation should be realized, be peculiar to herself.

EDUCATIONAL VALUE OF THESE EXHIBITIONS AS SHOWN IN THE WONDERFUL ADVANCE IN ENGLISH ART INDUSTRIES SINCE 1851.

A remarkable illustration of a similar impetus given to English industries by the previous expositions at London was observable at Vienna. It was there generally conceded that the most brilliant success won was in the department of the ceramic arts, and in this the palm was generally conceded to the English exhibitors. The progress made by them, and the absolute excellence they had attained, were most noteworthy. This was attributed to the improved education and increased artistic taste of the country, largely due to the influence of the South Kensington Museum and the system of art schools of which that museum is the great centre. These again originated out of the first London Exposition of 1851, and remain as a lasting monument to its success and utility. A more correct appreciation of circumstances and a more perfect organization of details, would obviate in a very great degree as respects the Centennial, the danger of any such disastrous financial results as those experienced at Vienna. That which may be possible in London or Paris may be impracticable at Philadelphia.

IMPORTANT RESULTS IN THE ART DEVELOPMENT OF AMERICAN INDUSTRIES TO BE LOOKED FOR FROM THE COMING CENTENNIAL EXPOSITION IN PHILADELPHIA.

If, however, this appreciation of circumstances and regard to details could but be secured, it may be questioned whether any civilized people is in a condition to derive more immediate or more important results from a successful world's fair,

*Reports of the Massachusetts Commissioners to the Exposition at Vienna, 1873; With Special Reports Prepared For The Commission. Edited by Hamilton A. Hill, Acting Commissioner. Boston: Wright & Potter, State Printers, 79 Milk street (corner of Federal). 1873. Pp. 566.

than are now the people of this country. They are in no respect in the condition of the people of Austria; but it was impossible to examine the rare display at Vienna, without being deeply impressed with a sense of the educational results to be derived by America from a similar experience. As respects taste and artistic development,—in all the results of a higher and more thorough education,—our people are as yet sadly deficient; they need an impetus. No one could walk through the Exposition at Vienna and not experience a realizing sense of the fact. Should the Philadelphia Centennial lead to such results with us as the Exposition of 1851 did with the people of England,—should it leave behind it with us, as that did with them, a keener appreciation both of our national shortcomings and our possibilities,—it will not be otherwise than a brilliant success, even if it bequeaths us also a deficit as large as that which the Austrian authorities are now contemplating with disappointment and dismay. Pages 13, 14, 15. * * *

POOR SHOWING MADE BY THE UNITED STATES IN THE VIENNA EXPOSITION.

Speaking generally, however, and taking into account the civilization, the wealth, the standing and above all the pride of the country which contributed it, the American department was the least creditable of the Exposition. The exhibit of machinery saved it from being wholly discreditable, and the educational department excited some general interest. * * * A walk through the American department left on the mind an unpleasant impression for meagreness in production, absence of taste and poverty of imagination; which was even painful if the visitor happened to approach it through the superb English and French displays next to it in order of arrangements. Page 17. * * * America was not, however, represented in all the groups. Nothing was contributed to Group XIX., which related to the arrangement and interior decoration of the private dwelling-house; or to Group XXII., which was devoted to showing the influence of museums of fine arts on industry; or to Group XXIV., which was made up of objects of fine arts of the past, exhibited by their owners. In Group XXV., in which were included the fine arts of the present time, produced since 1862, the American exposition was wretchedly and disgracefully inadequate. In Group XX., being the farm-house, its arrangements, furniture and utensils, Mr. F. H. Appleton of West Peabody, furnished the solitary contribution, a modest plan of the farm owned and cultivated by him. In Group XXI., of national domestic industry, which included the superb potteries, porcelain, tapestries, laces, metal articles and carved work, which were the brilliant feature of the Exposition, the only American contributors were two young ladies, respectively from New York and Michigan, who sent, the one an "Embroidered Picture," and the other a "Phantom Boquet." In Group XXIII., relating to art applied to religion, and which included the entire ornamentation of all sacred edifices, the American contributions were two in number, and both from New York, the one being a "Bronze Lectern," and the other an improved "Burial Casket." Page 23. * * * A very brief study of the Exposition sufficed to show, that, so far as America was concerned, the articles contributed to it were divided by a broad line of demarcation into two classes. In one class were included the articles of practical utility, including especially all labor-saving appliances; in the other were those results of human skill, the production of which was due to a more educated hand or to a more developed artistic taste; which showed a finer touch or a more thorough technical training. As regards the first class of exhibits, revealing a ready resource and a great, though somewhat coarse, practical ingenuity, America, even at Vienna showed a sufficient degree of strength. Page 24. * * *

FAILURE OF MASSACHUSETTS TO EXHIBIT EXAMPLES OF ARTISTIC INDUSTRY.

It is not so, however, as regards the exhibits of the second class. No richer field of instruction for Massachusetts industry could have been desired than was presented at Vienna in the display of articles, the excellence of which lay in the nice skill or educated taste or thorough training of those who produced them. America was here immeasurably behind all leading competitors. After full consideration, therefore, it was determined to devote special attention to securing detailed reports bearing upon the exhibits belonging to this class, and to confine the reports relating to machinery and labor-saving inventions within very general limits. Page 25. * * * We, no less than the people of England, of France and of Austria can learn much in these great industrial arenas, where our products will be brought into contact and comparison with those of other communities before our own eyes and those of the world. The State itself, also, as an educator, may derive most useful lessons from the experience; for, hitherto in America we are at best too far removed from what

are still and will long remain the great models of art and the most thorough systems of instruction. * * * A nation or a community in entering upon the competition of a world's fair must have one or both of two objects in view; it must go there to exhibit, or it must go there to observe. In going there, however, for the one object or the other, or for the two combined, there is, after the experience we now have of such undertakings, no possible excuse for any people in going so unprepared or so represented as to either fail in accomplishing the objects it has in view, or to humiliate itself and its citizens in the eyes of those with whom it proposes to compete. Whether to exhibit or to observe, however, it is not too much to say that the entire arrangement of the American organization at Vienna, both state and national, was an utter, entire and disgraceful failure; a failure in conception and a failure in execution; a failure unjust to our industries, discreditable to the country and humiliating to those more immediately concerned. * * * But a no less pointed lesson of experience can be drawn from the manner in which we approach the Exposition as a school. It was not possible to look at the amazing results of science and skill there displayed, and not be impressed with the inexhaustible wealth of suggestion they contained for any American community. There is probably no other people which could draw so many benefits from it. But to secure those benefits it was necessary that the displayed, and yet more the hidden resources of the Exposition should be studied and developed by men who were masters of their subjects. Pages 27, 8, 9. * * *

OPPORTUNITY FOR STUDYING DEFINITE RESULTS OF EUROPEAN TECHNICAL AND ARTISTIC EDUCATION.

Take, for instance the great branch of technical and artistic education which has already been referred to. It has of late years undergone a surprising development in Europe, the results of which supplies its most interesting and instructive feature to the recent Exposition. It is now exciting the greatest interest among all thoughtful men in America, and promises infinite results in our immediate future. The Massachusetts commission might well have been organized with a single view to dealing thoroughly with this department. Had it been so organized, the end in view would have been strictly proportioned to the means at command. To me, personally, from an early period after my arrival at Vienna, it has been a cause of deep regret that this view of the subject was not earlier taken. Page 32.

SELECTIONS FROM REPORT OF HAMILTON A. HILL, ASSOCIATE COMMISSIONER.

Turning from the buildings to the articles in them, the first thing to be noted is this: that, contrary to the general impression in America, the contributions of the different nations were not mere irregular collections of incidental objects, furnished by parties who desired to advertise themselves, but, on the other hand, were well assorted, and generally complete illustrations of the industries of the several countries, with one unfortunate exception. We believe this is true of all the principal nations. The spirit which seems to have animated them is well illustrated in the address of the French commissioners to the public at the time of their appointment. After speaking of the material advantages to be gained from this Exposition, they continue:

APPEAL BY FRENCH COMMISSIONERS TO FRENCH PRODUCERS.

"Beyond these material advantages, on which it is useless to dilate, so obvious are they, there is always in France a sentiment to which appeal has never been made in vain—that of patriotism. France must be worthily represented at the universal Exposition in Vienna. She must present herself there in a manner to prove that she has not fallen from the high rank which belongs to her in the civilized world, and that on the morrow even of the dolorous events which have lately transpired, she is ready to sustain the reputation she has acquired in the arts—in productions where intelligence and modern science, taste, invention or skilled hand-labor have gained a superiority never contested."

In this spirit, the French entered into the Exposition, and government and people joined in making it in fact all that this address indicated.

It is but fair to add, that the spirit of the other leading nations was not behind that of the French, and that they made a good and general display of their various industries, regardless of the consideration that they might not gain for them an immediate sale. From this it resulted the Exposition was in reality a universal exposition of the worlds industries, and that the visitor could there study the present status of any matter in which he was interested,—in every part of the Old World, at least. Pages 60-61.

IN MERE MECHANICAL FACILITY THE UNITED STATES MADE A GOOD THOUGH SMALL EXHIBIT.

And first, of the comparative condition of the arts in the United States and in other countries. On this point, it may be said that in all practical matters,—in machinery, in agricultural tools, perhaps in the preparation of articles of food,—in the groups from V to XVIII., so far as matter is concerned, and not the style or taste, including textiles, leather and rubber, metal and wood industry,—in manufacture of paper, sugar, and the thousand other useful matters,—in our philosophical and surgical, and in musical instruments,—we appeared, or should have shown ourselves, if we had been adequately represented in this Exposition, quite on a par with any other people. In machinery of every kind, it was universally conceded that our collection, small as it was, and lacking in every direction those labor-saving inventions so familiar to us at home, but unknown abroad, was still the most original and admirable display in the machinery-hall. Pages 63-64. * * *

IN THE FINE ARTS AND IN ARTISTIC INDUSTRIES THE UNITED STATES WAS DEPLORABLY INFERIOR.

But if in those industries which tend to the physical comfort and convenience of mankind the United States stood as high as, and in many respects higher than, other countries, in the Exposition, it was far otherwise in the sphere of art, both in its purer conditions of painting and sculpture and in its application to manufactures. In the preparation for the Exposition in this country, those gentlemen who originally had the charge of our interests did not, with one or two exceptions, apparently command the confidence of our artists nor of our manufacturers who depend on their art or taste to give value to their works, sufficiently to persuade them to send their productions to Vienna. Moreover, a single walk through the art-galleries and down the great nave of the industrial palace, in which the exhibits of the applied arts were generally assembled, would have satisfied the most doubting that if we had done the best we could we should still have made a most deplorable failure in this side of the Exposition.

PROMINENCE GIVEN TO ART INDUSTRIES.

In the arrangement of the exhibits, this department was made the most prominent of the whole. Passing by the art-galleries, and speaking only of the arts in their applications to industry, the whole of the great central nave of the main building was substantially devoted to this form of art. With the English, the most magnificent displays were made of porcelain, pottery and glass; and the cases of the Mintons, Copeland, the Worcester works and Wedgwood were splendid illustrations of the value that this nation sets upon this work. Nor were the French behind them. The porcelain of E. Colinot, Deck and Jules Harvey, of Cristofle, Barbadienne and others; sustained their ancient reputation. It is said that the English in earlier Expositions were much astonished and mortified at the inferior position in which they appeared in comparison with the French, and set themselves to work in earnest to introduce a better and higher art into this class of work. We do not think we are wrong in saying that to-day they show in this department a more varied collection of beautiful forms, a more original taste, and a better application of the models of antiquity, and of the ideas of such nations as the Indian and the Japanese and others, than do the French.

In artistic metal-work there were some admirable displays—as those of Elkington and Hancock, in the English department, of Barbadienne and Cristofle among the French. Of the work of the latter too much cannot be said. Much of the painting and sculpture of the French, though powerful and artistic is morbid in its character, rioting in the horrible or the sensual; but in this metal-work of Cristofle's, the art was of the purest and simplest character, taking its subjects from the most common objects of nature and working them into the ornamentation of the material with a simple grace as healthy in tone as it was artistic in character. Both English and French work in this department, and measurably also in that of pottery and porcelain, showed very distinctly the influence of Japanese art, the merits of which they incline to adopt without taking its absurdities.

EXHIBITION OF FURNITURE.

In furniture the English had some very artistic work. Their manufacturers employ some of the best artists to prepare designs for them. The simplicity and beauty of these are very far removed from the heavy styles, overloaded with

machine-made ornaments, which we too generally find with us. In furniture, the Austrians were, however, perhaps of all exhibitors, the strongest. Their forms were for the most part very simple, and their great effort seemed to be to bring out as strongly as possible the natural beauties of the wood. Where ornament was introduced, it was in the form of inlaying or of hand-carving. The artistic feeling of Europe seems to have recognized the fact, that those objects alone are really beautiful which have been produced by hand-labor, and by the individual thought and taste of the artist applied to each individual ornament.

A very attractive department in the Austrian section, and one to which they devoted much attention, was that of interior decoration. Many small rooms were fitted up by different artists, and, without exception, the combinations of colors and effects were those of refined and cultivated tastes.

EXHIBITION OF ORIENTAL CARPETS.

One of the most interesting collections, in which artistic feeling had scope to display itself, was that of the carpets, of which there were literally hundreds in the Exposition. Undoubtedly the East, with her hand-made work, carried the day here, and of the Eastern nations, the Persians were perhaps the most perfect. Equal to any in richness of effect, they surpassed in the perfect harmony of color. It is needless to say that the good feeling of all these Eastern nations leads them to avoid those glaring contrasts of color and staring patterns which are too common in our windows; and it was noticeable also that all their figures had a perfectly flat effect. The apparent projection of flowers, fruit and geometrical figures, looking as if in danger of tripping the foot at each step, is most carefully avoided. The English, and in a measure the French, showed the effects of a study of these Eastern productions, and the best work of the English certainly was in styles borrowed from them.

The Austrians were still closer students of these Eastern nations, and much of their display could hardly be distinguished from its original.

Of cast-metal artistic work there was an immense quantity in the Exposition, not only in bronze, but in iron. Special attention is called to this latter material because its management has become so well understood in its application to this purpose, that it produces as clear and fine surfaced castings as bronze, and in this way good works of art can be cheaply supplied.

ATTENTION GIVEN TO PROMOTION OF ARTISTIC TRAINING IN EUROPEAN COUNTRIES.

The rooms of the fine-art buildings, many as they were, were always filled with crowds of people. The number of visitors here was the best evidence of the general interest taken in Europe in the arts. The report which we have caused to be prepared, to present with this, will say all that is necessary on this point.

These few lines have been devoted to a description of the art-manufactures exhibited at Vienna not for the purpose of attempting to give any idea of their artistic merit, nor of their extent, but only to show how great a degree of attention is now given abroad to this form of industry.

Both governments and people there are exerting themselves to extend and improve the popular taste for art, and to elevate the artistic character of their national productions. To this end they are encouraging their museums and schools of art, and the general introduction of drawing in their public schools. The influence of the Kensington Museum upon the taste and the artistic character of the English manufacturers cannot be overstated, and the wonderful advance they have made between the Paris Exposition and that of the present year, is largely due to its teachings. Among other modes of instruction, it makes appropriate collections of works of art, and sends them out into the different manufacturing districts, there to remain for several months, open to the free inspection of all who wish to study them. On the continent, also, those interested speak in the highest terms of the influence of their museums and art-schools in improving the general taste. One of the most noticeable things about the art-manufactures in the Exposition, was the number of beautiful and characteristic objects which were bought for these different European museums.

IMPORTANCE OF ART MUSEUMS.

This is not the place to discuss the propriety of encouraging art in comparison with merely mechanical labor, nor to consider how far, as a nation becomes richer, it is necessary to elevate the tastes, and to furnish new and high interests to the

people, if we would prevent them from degenerating into luxury and dissipation. Our State has taken its position in this matter by introducing drawing into the public schools, and by the encouragement of artistic study in the schools of technology; and it only remains to push on the work as vigorously as possible. The encouragement of museums is certainly one of the most direct and effective means of so doing, and, great as is their influence in Europe, they would be much more powerful here. Indeed, something of the kind is essential to our art-education. Students and the public in Europe have the great advantage over us in living in countries where they are continually in presence of art-work. With us, who have not this inspiration, there remains only the influence of museums, as a means of cultivating an artistic taste in the community. The writer believes that with us the natural taste is better than in most European countries, and that, with proper effort, our people can be educated to take high rank as artistic producers; and it is not impossible that when we do acquire an artistic skill, our work will be found to be more original and more beautiful than that of many people now far in advance of us in this department.

EDUCATIONAL IMPORTANCE OF WORLDS FAIRS.

Some consideration was given by the writer at Vienna to the question of the value of Expositions—which may be considered as a species of temporary museum—as a means of developing industry, both of a practical and an artistic character. In the United States, particularly, there has been a tendency to think lightly of them. It is believed that this is a mistaken view. In respect to the international exhibitions, held in foreign countries lately, it has been felt that, as an immediate means of advertising our productions, they were of no use to us, on account of the higher range of prices prevailing in the United States. In this there is less difference than is commonly supposed; and there is an advantage in many classes of our productions—in point of convenience, adaptability, or amount of work they will perform, or that they will endure, which would more than outweigh this difference, were their quality and character better understood abroad.

Again, there is in some quarters an idea that we are so superior to other nations that we have nothing to learn from them. It is perhaps true in regard to certain industries, that we could teach more than we could learn, but in entertaining this opinion, there is great chance that others, who are taking every advantage for educating themselves may be passing us in the contest. In other industries—pertaining to matters of art especially—our citizens, admitting our inferiority, have undervalued the artistic side of expositions, and the value of art generally. Leaving the moral and social considerations out of view, we believe there cannot be a greater mistake, in view of material prosperity. The State, like the individual, which can add to its practical skill good taste and artistic ornament, has added another element to its means of progress in wealth and influence.

ECONOMICAL IMPORTANCE TO MANUFACTURERS, OF INTERNATIONAL EXPOSITIONS.

So far, then, from joining in the general feeling in regard to foreign expositions, the writer believes that they can be made of very great value to us. Had our manufacturers more generally sent their productions to Vienna, it cannot be doubted that they would have been repaid, both pecuniarily and as a matter of education. While there is too much disposition with us to rest in the belief that we cannot reach foreign markets, the English, French, and above all, the Germans, are using every effort to learn the tastes and wants of other nations, and to adapt themselves to them, and are seeking every means to show what they can furnish.

We, in Massachusetts, cannot now afford to let pass any opportunity for educating our producers, nor for opening new markets.

The last census reports show that we are hardly holding our own with the rest of the United States in the increase of our manufacturing interests, and that some of them are in fact advancing much more rapidly than we.

NEW ENGLAND NEEDS TO DEVELOP ARTISTIC MANUFACTURES.

In former times, the rocky nature of our soil and our climatic conditions forced us into manufacturing industries, in which we acquired a skill and reputation which made it difficult for other parts of the country to compete with us; but with the increase of wealth in other sections, the requisite skill is there being gained for competition with us and we can only hold our own by a careful encour-

agement of every means of keeping us up with the latest improvements, of introducing among us new departments of manufacture especially in the direction of matters of taste and art, and finally of opening to us every possible avenue for the disposal of our manufactures, and teaching us how to adapt our wares to these new markets. We think the State has shown its disposition to do this in the encouragement of scientific schools, whence well-trained and liberally educated men will carry a new influence into our manufactories, and in the introduction of drawing into our schools in a manner which will develop in the next generation new and artistic forms of productions. But we believe that these means may be more powerfully supplemented would the Commonwealth lend its influence to the encouragement of properly conducted expositions among ourselves in other departments, as it does in agriculture. By a full comparison of our productions through the intercourse which would thus be produced among our manufacturers, by a well-directed effort to bring in the work of others in other parts of the United States and from abroad, and finally by getting together and setting open to the body of the people all these works of art, both pure and applied to industry, which are either not known or not appreciated by our citizens at large, we believe a stimulus could be given to industry more immediate and more powerful than in any other way. By making such an exposition a bonded warehouse, our importers and their foreign correspondence would willingly place in them many illustrations of European productions, which could be afterwards sold or returned.

PROSPECTIVE IMPORTANCE OF THE CENTENNIAL.

Passing this point, attention is also called to the Centennial Exposition of 1876. The declaration was general, especially with the Germans, that they should attend it, and if properly conducted it cannot but be a success. Besides the Europeans who will visit it, it will collect large numbers of people from South America and the West Indies, and many from Japan and the East. The Japanese have already signified their intention of making a full and imposing display of their productions.

In view of these facts, the policy cannot be too strongly urged, of making an early effort for a full exhibition by the State of Massachusetts at this Exposition.

Among the branches which were most thoroughly developed at Vienna was that of education. It was made a matter of great prominence by the directors of the Exposition, and the means of illustration, in buildings, material for instruction, publications, etc., were numerous. This portion of the exhibition and our place in it is passed over here, as the Special Commissioner, Mr. Philbrick, has, no doubt, fully developed it. Pages 68-73. * * *

SELECTIONS FROM REPORT OF MR. LOUIS J. HINTON, SPECIAL—ARTISAN COMMISSIONER. "MUSEUMS OF ART AND INDUSTRY."

Baron Schwarz-Senborn, the conceiving as well as the directing mind of the Vienna Exhibition, announced, early in the progress of preparing for that enterprise, that one of the most important, if not the chief, feature of the undertaking, would be the illustrating of the progress of education the world over;—the various methods and appliances for teaching in use in the different countries of the civilized world. Museums of Art and Science were, of course, to find a place in this display. Their value as educational agencies has been too clearly demonstrated in states where they have been established to admit of leaving them out of the Exhibition. * * * The Museums are only a part of a system or systems that have their root in the common schools, hence; to gather a clear idea of their work, it is necessary to go behind or below them, into the schools where drawing is taught, and other technical knowledge imparted, in order to make a thorough study from the beginning, and so on up to the Museums themselves, before a clear idea can be gained how the known results, existing to-day in industrial art-training, are reached. Page 100. * * * One official document can be given—that referred to above, as it preceded the Exhibition and endeavored to convey, in a rapidly sketched outline, what the Austrian Direction desired might be done. This was "Special Programme, No. 12, for Group XXII."

This paper is in itself an evidence of the deeply-rooted hold Art and Industrial Museums and art-teaching, as applied to industry, have taken in Austria; and having been written, it is thought, by Herr Jacob Falke, the acting head of the Vienna Museum, it may be taken as the utterance of one who is no mean authority on the subject whereof he writes.

PROGRAMME RELATING TO MUSEUMS OF INDUSTRIAL ART.

This special programme runs as follows, omitting the excess of title that prefaces it:—

"Among the instructive establishments of our time which have most rapidly proved to be of great utility, the Museums of Fine Arts applied to Industry must certainly be included, and almost every city of importance possesses such an institution. This fact alone would suffice to justify the attempt we will make to show their organization and influence.

"These institutions stand as well by the object they have in view as by the results they obtain, between real life and abstract theories; they are the mediators between the past and the future of the development of Fine Art applied to Industry. The eminent position taken by modern industrial art for the last few years, furnishes the best proof of the justness of the remark made above.

"It may certainly satisfy and rejoice professional men to see the careful manipulation of different raw materials, and the use made of machines ingeniously constructed; but if a more elevated taste was not combined with the technical process in the execution or ornamentation of these products, one could hardly say that industry is improving.

"One of the most remarkable improvements made by industry dates back from the time when the idea first occurred to collect carefully together the rich treasures of former centuries, which had remained so long unused, to make model collections of them, to take up again and to organize the progress made by our industrious ancestors in some branches of industrial art and in those objects produced by manual skill.

"The technical skill with which any object is manufactured is not sufficient to produce an object answering the exigencies of a connoisseur. An intelligent appreciation of the task to be fulfilled, the right feeling of the most suitable form; in short, taste in the invention and execution of each article, has become an indispensable quality for industrial production, and it alone raises the object manufactured to the rank of a work of industrial art, i. e., an object not only useful but also satisfying the requirements of good taste.

"Most of the industrial schools and institutions for promoting the study of Fine Arts applied to Industry, which under the direction of experienced connoisseurs fight every day with greater success against the old methods of proceeding and unthinking routine, owe their foundation to the acknowledgment of these truths.

"Still the creation of Museums of Fine Art applied to Industry, of those treasures of the history of art, are still more the consequence of the right feeling of the ennobling influence of art upon industry. It is from this point of view that the merits of the Museum of Fine Art applied to Industry of Paris, London, Edinburgh, Moscow, Berlin, Stuttgart, Munich, Weimar, Gotha, Limoges, Lyons, etc., just as richly endowed as they are generally useful to all, must be appreciated.

"After these come those museums, which, although not directly promoting Fine Art and Industrial Art, have indirectly the same object, by pursuing a scientific or statistical object. These institutions are also the result of modern efforts toward civilization; as, for instance, the German Museum at Nuremberg, the Romano-German Museum at Mayence, the Museum Richartz at Cologne, the museums at Havre, Amiens, Toulouse, etc.

"It is not necessary to enter into more particulars, to prove the great utility of these creations of modern times for the wants of our generation: the great number of visitors, the extended use made of them, and the influence they exercise upon modern industry, which is easy to remark, are matters of fact which every professional man acknowledges with pleasure.

PURPOSE AND METHODS OF MUSEUMS.

"These museums attain their purpose by different methods. Firstly, by their collections, which are arranged with precaution and discrimination, and which procure as much to the eye of the connoisseur as to the unprofessional man, a really contemplative lesson. Only instructive and most perfect objects find room in their chests and on their walls. There, one can pursue historically gradual development and progress in the production of every sort of article, and an attentive spectator is enabled to follow the laws of industrial progress in the direction mentioned. There is no room for vain pomp in those establishments, where everything has as its aim, to show how the value of every single article can gain by a tasteful transformation, which, far from prejudicing its sale, augments it.

"Secondly, those museums exercise a very beneficial influence on the schools of Fine Arts applied to Industry, which are combined with them. The living word is

found on the inanimate object, and the explanation on the model. The teachers engaged here explain to their scholars all those important qualities which every production of industry, even that destined for every day's use, must possess, in order to answer the exigencies of taste. The scholars learn, therefore, to appreciate the value of a certain simplicity, to understand and make use of the laws of the style of symmetry, and thus become those men who, later on, furnish the market with artistic objects, i. e., with such objects as are remarkable for their utility and moderate ornamentation.

"All the useful methods employed by the museums of Fine Arts applied to Industry to exercise their influence, are to be exhibited and demonstrated for the first time to the public in this group, and in such a manner that every museum will be allowed to organize its own exhibition in the manner the president of the institution may think best fitted to have it worthily represented at the Universal Exhibition. Still, in order that the whole exhibition of this group may be as complete and instructive as possible, it would be as much conformable to the purpose as desirable, that each single institution should previously communicate in which branch it more particularly wishes to exhibit. Should this proposition be favorably accepted, each artist and industrial workman will find enough to inspire him in his branch; and, to mention only one thing particularly, modern ornamentation will become richer in new models of design.

"But in order to prove to the public the practical influence of these institutions, it is indispensable that the publications of each single museum should be exhibited as samples and in single numbers; by this, we mean, more especially the reproductions—plaster casts, galvanoplastic impressions, photographs—and the artistic literary publications of the museums. Concerning the former, they must be confined, not only because of the space, to these works of art, the originals of which are in the possession of the country exhibiting. As to the latter, we cannot sufficiently express the desire to see them exhibited in collections as complete as possible.

"Finally, the museums are requested to give exact statistical statements of the number of visitors to their institutions, of the organization of their schools, etc., in order to furnish materials for the statistics of the museums of Fine Art applied to Industry.

"Signed by the President of the Imperial Commission: Arch-Duke Regnier; and the Chief Manager, Baron Schwarz-Senborn. December 10, 1871." Pages 101-104. * * *

EQUAL VALUE OF MASTERPIECES OF LITERATURE AND OF ART.

We can all fancy the immense influence the classical works of our language have had and still exert upon the English speaking race. There is no one among us who can measure its extent, but we might imagine our loss if we were to be deprived of our Shakespeare, our Milton, and all the other bright stars in the galaxy of literature.

So it is with the museums of Arts as applied to Industry. They are silent instructors, with no record other than so many visitors in so many years. The schools of arts generally attached to the museums stand upon a different footing, as it is possible to keep some account of the work they perform.

The author of the special programme clearly saw the difficulty with respect to the museums. Although he forbore to enlarge upon that theme, he clearly indicated how desirable it would be if such information as to the extent and reach of the influence of museums of Arts as applied to Industry could be given. This is still unknown, except as it can be gathered from the opinions of those best entitled to speak upon the subject, and we believe no attempt was made to show its extent, by any of the states which have found their profit in establishing centres of instruction in the Fine Arts as applied to Industry. * * *

The Austrians certainly did not attempt to show, in a direct way, how they had been and are still benefited by their beautiful museum. The endeavor will be made, ere this Report is closed, to state how they did show, indirectly, somewhat of the profits reaped by them, in payment of their enlightened encouragement extended to the Fine Arts and to Industry.

Pages 104, 105 * * * To give even a brief résumé of the models, etc., exhibited by the Vienna Museum in Group XXII., would be to turn this Report into something like a catalogue.

CIRCULATION OF ART LITERATURE.

The literary Art publications, either written by members of the faculty or under the direct encouragement of the Museum authorities, occupy the first place on the list. The writing and spreading of works upon the Application of Art to

Industry, upon Taste, upon Study, and kindred themes, is one among the many useful labors performed by the Museum of Arts applied to Industry. These works numbered thirty-five.

CIRCULATION OF ART MODELS.

There were, also nearly four hundred gypsum models, beside galvanoplastic impressions, photographs and specimen copies of students' work. The Vienna Museum may be said to be one result of the influence of the idea that gave rise to the South Kensington Museum. Herr Jacob Falke, keeper of the Austrian Museum of Art and Industry, in his History of Modern Taste (*Geschichte des Modernen Geschmacks*), writes as follows on this point :

VALUE TO ENGLAND OF THE SOUTH KENSINGTON MUSEUM AND SCHOOLS.

"When the works of industry of all nations were brought together at the first London Exhibition, in 1851, the deplorable state of taste was made palpable to the perception of all those who would and could see. * * * There was only one nation wise enough to take to heart so important a lesson, and proceed at once to turn it to account—the English. * * * A Museum of Art Industry, that of South Kensington, was then founded.* This Museum, therefore, must be considered as a result of the experiences made at the first International Exhibition. It has now become celebrated through all countries. It was not intended for the benefit of the artist alone, but for that of the general public as well. But matters did not rest with the creation of the South Kensington Museum. A large School of Art, comprising all branches of elementary Art instruction, was established in connection with it. *Since great artists, nowadays, do not make designs for manufacturers as they once did,* it was found necessary to educate technical designers, painters and sculptors, and to make them into accomplished artists, and to educate teachers competent to conduct schools of design in an artistic spirit. Moreover, drawing schools were established in all the manufacturing towns; circulating collections of objects for exhibition were organized, and competitive examinations and distributions of prizes established. Competent persons were sent out to give lectures on all subjects relative to Art manufacture; a whole branch of literature on this province of Art was called into existence; in short, a stir was made in every direction in which any practical result was to be hoped for. These efforts have been crowned with success, and it has been proved that something could be achieved in this new way. After the lapse of eleven years, at the second London Exhibition (1862) it became evident that England, which, till then, had been considered as taking the lowest rank in matters of taste, stood side by side with France, in an equally high position in these respects. * * * Austria was the first among the continental States to turn to profit the example even before France had begun to make new efforts, and in May, 1864, a Museum was established at Vienna after the model of that of South Kensington—the Austrian Museum of Art and Industry."

THE GREAT ART MASTER MUST AGAIN, AS OF OLD, WORK FOR THE PEOPLE.

The italics are not in the original. Herr Jacob Falke here indicates the great want of the age—the need of men who are really artists and sculptors, to step down from the pedestals upon which they have elevated themselves, and mingle a little more amid the work of the world, as did the great men of old.

Grinley Gibbon or Flaxman, did not injure themselves, or lessen their after fame one iota, but on the contrary they increased it, by exercising the powers God had given them, the first-named at Saint Paul's Cathedral, where he was the guide and inspiration of a crowd of carvers and artisans, the latter, working for Josiah Wedgwood designing cups and saucers, etc., for common use, in accordance with the rules of art and classic taste; not to mention the host of other great men, long departed, who despised nothing in industry that could be made artistic.

The Museums of Art and Industry will have performed a great work, if they do nothing more than cause a change in this respect, as there are signs that they have been able to do, not thoroughly as yet, but they have made a beginning. It is no longer a rarity to find men who have acquired a reputation for their art-work, designing, quietly and unobtrusively, furniture, plate, wrought-iron gates, carvings

* This is not quite correct, as the Museum was first established in Marlborough House, now the residence of the Prince of Wales.

for stone and wood-workers, carpets, majolica ware, etc., both in England and on the continent of Europe.

The rank and file of labor need commanders who shall be not alone bent on conceiving great projects. Let a man come among them who can shape out great things and he will make small things great also, if he is in earnest and loves the work; especially, as is now the case in most of the leading countries in Europe, if the rank and file have had a knowledge of art imparted to them to prepare them for their life's work.

Another fact has been demonstrated so plainly that it is now generally admitted as a truism, by the efforts put forth during the last fifty years to elevate the masses; i. e., "Those who can be taught to write can learn to draw." This fact established destroys the awe that has so long hedged in the Fine Arts, and is another contribution of the nineteenth century to the freedom of mankind. Thus kid-glove artists, who have withdrawn from the company of artisans and manufacturers, have conferred an incalculable benefit upon the world at large, in forcing upon it the conviction that all of God's gifts are universal, if not allowed to perish from neglect, or ignorance of their existence. So, if these artists have become so refined as to fear that the dust of the workshop may soil their fair, white hands, the workers will take up the task, and in the endeavor to elevate their own powers and taste will elevate the whole community. This is peculiarly in a line with the spirit of American growth. Pages 107-109. * * * However gallant it may be to our feelings, we must admit that in many things the people of Europe are ahead of us, as we surpass them in others. The Vienna Exposition showed that we are, at least, behind in the matter of education—not that imparted in our common schools and colleges, for as far as they extend they are unsurpassed in their teaching; but the education that makes fairly-rounded men and women, not one-sided individuals, who, when they really enter life have to unlearn much and learn more ere their labors are of any account.

We have a broad basis to build upon, yet it is not so broad or so comprehensive a system as that established by Austria for her subjects. Like her German neighbors, she recognizes the fact that there is no royal or easy road to learning; hence she begins low down, the school law framed in 1869 marking her "new departure." Page 110. * * * The Museum of Arts as applied to Industry, as its name implies, is part of this system of thorough education. To borrow from one of the Museum's published works:—"The object is to furnish material by Art-knowledge which shall be applied to industry, and thus produce an elevated taste, which is so much to be desired at the present day."

A brief résumé of the growth of this institution may perhaps prove interesting, as Massachusetts is treading in the same path as Austria.

THE VIENNA MUSEUM.

The chief impetus to the formation of the Museum was given by the London Exhibition of 1862. It will be seen, further on, why this Exhibition proved so interesting to the people of Germany, Austria, and France. The Exposition of 1851 had agitated the question, but in 1855 the roar of cannon from the Black Sea prevented any active result. In 1862, public attention was again aroused by Professor Rudolph Von Eitelberger, who had been sent to England to report on the comparison of Austrian industry with that of other nations.

He gave a glowing account of Art in foreign lands, and the institutions for its promotion, especially speaking of the South Kensington Museum at London. The report was laid before the Emperor, and in the fall of 1862 the professor was notified to prepare for assisting in establishing a Museum. The want of funds in the treasury was a great hindrance to doing anything at public expense. Finally, Duke Regnier obtained from the Emperor a formal permission to found an "Aesterreichischen Museum für Kunst und Industry." His Majesty (Francis Joseph) appointed the Arch-Duke Regnier as Protector of the Museum. Professor Eitelberger was appointed Director, and Herr Jacob Falke, Custodian. The Imperial Ball House was lent for a temporary abiding place for the Museum, and it was opened May 31, 1864. By the gifts of the Court and State the Museum was rapidly increased, and many collections were procured. The need of a special building for the Museum was more and more apparent. On February 7, 1867, a deputation of curators waited on the Emperor, and asked to be allowed to proceed with the erection of a permanent Museum. The permission was given, and in the fall of the same year the plans of Architect Heinrich Ritter von Ferstel were submitted and approved. The building was completed November, 1871, and was then opened.

THE BUILDING.

It is in the Italian Renaissance style. The exterior walls are of red brick, trimmed with sandstone. Portraits of artist celebrities, executed in majolica, are placed around the building. Entering, we go through the vestibule, where are two tablets, commemorating the foundation of the Museum and the Art-School, from which a door on the right leads into a closed court; on the left are the steps leading to the school floor. Vestibule, court and stairs are adorned with appropriate ornaments. The square court, extending the entire height of the building, is surrounded by arcades, supported by pillars and monoliths. Light comes through a double glass roof. Around the court are eight exhibition halls.

THE COLLECTIONS.

The Museum comprises collections of objects in all branches of Art and Industry: gypsum figures, a library, drawing, ornamental pieces, photographs, etc. Companies and private persons, besides artists and industrial workers, can exhibit their work in a hall reserved for that purpose. Admission to the Museum is free four days in the week. Tuesdays and Wednesdays a small fee is charged, and even then artists are admitted free. The library is open week-days from nine to two, and Sundays from nine to one. During the winter months it is also open Tuesday and Wednesday evenings. On Mondays one-half of the collection is closed for cleaning. Articles exhibited are copied for the drawing department by photographs, photo-lithographs, galvanoplastic impressions or gypsum. Photographic reproductions and the gypsum processes are wrought out in the atelier of the Museum. Copies of these can be obtained from the authorities at cost price, for the use of similar institutions or technical schools.

THE MUSEUM PUBLICATION.

For the elevation of the public taste the Museum publishes a literary-artistic paper. This contains drawings of Art-models, articles on the theory and history of Art reform, taste, etc., critical reviews of articles exhibited and writings on the technology of Art. "The Monthly Mittheilungen" is devoted to special reviews of Art news, inventions, works on exhibitions in the Museum, and answers to correspondents. The Museum has correspondents in all the four quarters of the globe. During the winter free public lectures are held on Thursdays, with subjects taken from Art and applied to natural philosophy, industry, etc. Beside these lectures there are courses for young artists, to instruct them in special branches, as drawing perspective, the architectural orders, photography and technical Art. The lectures to the public are given from a different standpoint than that adopted by many of our lecturers on Art and its technics. In Vienna the lecturer aims to show the young aspirant how to make a beginning and how to progress upward in the study of the Fine Arts; while here lecturers who attempt to discourse upon Art and Artists, generally strive to show how impossible it is for any one to reach the height attained by the masters of old, thus chilling the awakening enthusiasm of their hearers, among whom, perhaps, may be some who would have liked to make an effort to acquire Art-skill and knowledge for themselves. But to return to the Museum.

For the benefit of the country at large, special exhibitions are given in towns outside of Vienna, on the plan adopted by South Kensington. Besides, the Museum gives advice to artists and manufacturers, and even furnishes models. It takes an interest in improving Art matters in technical schools, and is looked to for counsel by all institutions of learning.

The Museum is under the Ministry of Education. Its Government consists of Protector, Curators—whose term of office is three years—and Director, with whom lies the entire charge. Under the Director are four Custodians, two of whom are in the Art-galleries, one in the library, and one employed as Secretary.

The following Table shows the number of persons recorded as having visited the Museum since it was opened:—

	Persons.		Persons.
1864.....	* 56, 891	1870.....	87, 892
1865.....	118, 438	1871.....	{ +52, 927
1866.....	101, 738	1872.....	{ 142, 746
1867.....	118, 802		129, 441
1868.....	102, 460		
1869.....	97, 680		
		Total.....	909, 010

* First six months.

† Temporary building.

‡ New building.

THE ART INDUSTRIAL SCHOOL.

Soon after the opening of the Museum in 1864, the Board of Trade and Industries, of Lower Austria, asked of the State's Ministry that an industrial school be started in connection with it. This request was warmly supported by the country. On the 18th of February, 1865, the Council of Education ordained that a higher school of Art Industry should be established in connection with the Museum. A committee was appointed to draw up a code. Little was done the first year, besides familiarizing the pupils with the regulations. The artistic education of scholars was so limited, that about half the entire number admitted, or 24 out of 50, were obliged to enter the Preparatory Department.

One great trouble was the lack of funds on the part of pupils. In 1869, a number of friends of the institution formed a "Society for the Advancement of the Art-School," whose object is to aid needy students by distribution of school money, travelling expenses, etc., without distinction in regard to nationality, religion, or anything else. The Emperor is Chief of this Society. During the first four years of its existence, about one thousand dollars were gathered for a fund, and over six thousand for yearly expenses. In 1869, the Trade Ministry set apart six thousand florins as two years' pay for ten students, and renewed the same in 1871. To this were added twenty thousand florins given by Baron Louis von Haber-Linsberg, for students of Lower Austria. Prince Schwarzenberg gave a capital of one thousand florins (\$500) to be used for the support of a pupil born on his domain. These are not all the donations the school has received, but they are the principal sums given to help the students. Many manufacturers and friends subscribed smaller sums.

Apropos of donations, a compliment was paid to America by one of Vienna's able professors: "Ah, we want a few men such as you have so many of, who would donate us a sum that would place us at once in a position to achieve the much larger amount of good results we could attain, had we some such generous friend. The sums given by Peter Cooper, Ezra Cornell, Mr. Peabody, Commodore Vanderbilt, and a host of other gentlemen, to help on the cause of education, amaze us, not to mention the enormous grants of land made by your Congress for the same purpose."

One can hardly doubt, after observing what they have done, with what, in this country, would be considered very limited means, that had they but half the money so freely poured out for the cause of education here, they would achieve astonishing results, working as they do, upon strictly economical and practical systems, wasting nothing, and utilizing every force and help that converge to form the real, able, skilful and tasteful worker, whether he be an architect or mason, professor of languages or teacher in an infant school; whether he be the inventor of a steam-engine or the man to run it; whether he be the designer of the patterns for rich carpets or the man to weave them; whether he be the skilled forester or the wood-man who fells the tree; and so on, through every profession and every handicraft.

Perhaps, on the other hand, if they had the grand resources of this country to draw upon, instead of having to be keenly alive to the value of every cent they can earn, they would be moulded into free, pushing, go-ahead people, lavishly careless of that of which they now show themselves to be so minutely careful,—the intellect of the nation.

METHODS OF TRAINING.

It is most certain that they have a very practical method of training all within the confines of the state. No matter how successful or unsuccessful their efforts toward that end may be, the method is sound.

As, for instance: at the Art-School, where the terms begins in October and ends in July, pupils who attend the lectures contend for a prize at the end of each year. Female students have the same rights as the males. The admission fee to the Art-School is one dollar; tuition fees for the preparatory school, two dollars and fifty cents; for the higher school, four dollars and fifty cents, half-yearly.

There are ten professors, who have brought to them all the work they can perform. This is a point worth noting. The method of teaching involves practical work. It is no mere copying, but the real thing itself, at which the students can work with the professors. It would also seem to indicate that the school is a success, that their labor is in such demand as it is, by the manufacturers of Vienna.

The School and Museum aim to improve and elevate public taste. Although the most recent they are not the only institutions founded in Vienna for a somewhat similar purpose, and therefore care must be taken not to ascribe to the Museum alone results only partly brought about by its agencies.

TECHNICAL INDUSTRIAL TRAINING LONG ESTABLISHED IN AUSTRIA.

Technical, scientific education it does not attempt to touch; yet the imparting of this involves oftentimes the teaching of a right taste and feeling for the beautiful.

There is no need for the Art and Industry Museum to stir in this matter, as very ample provision has been made to meet the needs of the whole country in this respect. Technical instruction is of very long standing in Austria. At the beginning of the present century, three important schools were in operation, and others were instituted, long before the neighboring German States had moved in this direction.

The Polytechnic Institution in Vienna, as organized in 1815, was the culmination of efforts begun in 1765, to shape the instruction of schools to meet the special wants of pupils in their future mechanical or commercial occupations. It is one of the best equipped schools of its class in Europe. If it were combined with the Art Museum and School, it would stand next to the Science and Art Department at South Kensington, at present the largest centralized institution of its kind in existence, with the tendency to still further extend its power. * * * At the Vienna Polytechnic Institute there is a technological museum, the contents of which comprise more than 200,000 specimens of models, machines, etc., beautifully arranged. The whole Institute numbers about sixty professors, librarians and superintendents of the museum and astronomical observatory. It has an average attendance of five hundred pupils, distributed into four special schools or divisions, besides a mathematical course. These are: 1. Civil engineering. 2. Architecture and construction. 3. Machinery and manufactures. 4. Chemical technology, including students in the evening classes and preparatory division. The attendance exceeds two thousand every year.

It is difficult to draw a distinct line, and declare, Here Science ends and Art begins. This will be acknowledged by any one who visits the Polytechnic at Vienna, or any of its fellows. Pages 112-118. * * * The following is a concise summary, from the official catalogue, of the facilities for technical education provided by the Austrian Government for its people. It does not include the Art and Industrial Museum or School, or the galleries and collections above enumerated.

TECHNICAL SCHOOLS.

"In Austria proper there are 45 Superior Schools and Academies for scientific instruction in agriculture, horticulture, forestry, the cultivation of the vine and the silk-worm, and veterinary surgery, also of mining, navigation and commerce; with seven Polytechnic Schools, in all having 6,000 pupils and 426 professors and teachers. These schools are in part sustained by the Imperial Government, and are under the general direction of the minister charged with educational matters.

"Hungary has 13 similar schools, with 116 teachers and 1,311 pupils.

"Bohemia has an extended system of industrial instruction, more diffuse than in other parts of the empire.

"What are termed 'burgher schools,' answering to our secondary or grammar schools, have special courses, designed for mechanical and commercial training.

"Besides, there are, throughout the Austrian provinces, many workman and apprentice schools, usually teaching some special trade. In Vienna and Prague there are a number of these. In the latter city, there is one whose course includes the technical sciences, practical weaving, linear and free-hand, machine and constructive drawing, lectures on machinery, practical chemistry and modelling. There are classes for machinists, building trades, weavers, dyers, industrial artisans—as goldsmiths jewellers, porcelain makers, etc."

It must be confessed that Austria presents a splendid arrangement of practical and artistic educational agencies, and it is already evidenced that in the future they will increase rather than decrease. The principal trouble there is the extreme difficulty of obtaining a sufficient number of competent teachers. This will be remedied in the future, now that it is so generally recognized that the teacher's post is a most honorable one.

VALUE OF THIS TECHNICAL TRAINING TO AUSTRIA, AS SHOWN IN 1866.

It is safe to say that it is educated labor that prevented Vienna from sinking into a torpid state after the terrible blow Austria received at the hands of Prussia in 1866, so soon after her defeat in Italy, by the combined Italian and French forces. Her rulers were compelled to see, through the sober light of misfortune, that their true interest consisted in fostering industrial progress, and developing the resources

of the empire. This had been done to a very considerable extent previous to the events referred to above; and because such was the case, the city of Vienna could not lose her prestige; but by continuing to work in the same path of educating labor and fostering taste, she has attained a greater degree of prosperity than she ever before possessed—fortunate in having men at the head of affairs who see the importance of encouraging industrial enterprise and progress in the widest and broadest sense; fortunate in having a splendid system of instruction by which the citizen is helped in his life's work; and in having men who were already first in the trades and business for which Vienna is, and is becoming, famous.

A slight glance at the work done in the Austrian capital and its natural advantages will show the correctness of the assumption that the strength of this empire lies not in her drilled legions of soldiers, but in the armies of busy, skilful, hardy, trained workers. The industrial progress so apparent in Austria may really be said to have commenced in 1860, when the old walls that encircled the city were thrown down, and new boulevards built on their site; and confirmed when her rulers, in 1866, were taught that a stronger military power existed than their own. Pages 123-124. * * * All the various trades are reached, in a greater or lesser degree, by the Museum of Arts as applied to Industry and the numerous Fine Art Museums and Industrial Schools existing in the city.

The workmen take the raw material brought to them, and, as an English artisan once said of the Parisian *ouvriers*, in comparing them with his own countrymen, they put a hundred dollars' worth of work into it where we put one, before they permit it to pass from their hands. Page 126. * * *

PROSPECTIVE VALUE OF INDUSTRIAL ART TRAINING TO AUSTRIA.

The influence of these attempts of the leading minds and teachers of Austria to elevate the taste and improve the skill of all her workers, professional and artisan, bids fair to be crowned with the happiest results. By enlarging the scope of the people's mental vision, they insensibly polish their manners and aspirations, rendering them more content, cheerful and industrious. By giving them an interest in their daily work other than which comes from it as being the means of earning a livelihood, an ambition is fostered to excel in what each produces. It is of vital importance to the world at large that this should be done. The introduction of steam machinery into industry has, without doubt, added greatly to the power and comfort of mankind; but in its onward progress it has left behind, or destroyed, some things that it would have been well to retain; and, among others, the artisan, thoroughly master of his craft in all its parts. One-branch hands are in the majority to day—quick at a single thing only, as making the head of a pin or the handle of an iron shovel.

It is not at all surprising that there are so many empty-headed and shallow-pated men in each community, who are so conceited as to think they have nothing to learn. This dwarfing of mental powers engenders a whole train of evils. Open the closed mines of the workman's brains, and he becomes at once a thinker for himself, his work a pleasure to himself, and his life a blessing to all with whom he comes in contact. Thus, if Austria should apparently lose money in her immediate efforts to elevate the taste and aspiration of her people, ere long it will return to her with compound interest. The Exposition itself will have a great effect upon the nation. The native artificers, manufacturers and designers, have been able to compare the work of all the world with their own. In making this comparison they will have learned many lessons, and the varied literature the Exposition has called forth carries to their home the idea of men trained to observe and to report upon their observations. They must have noticed the general average ability of nearly all the European countries, in the staple manufactured articles in every day use, such as calicoes, boots, woollen cloth, etc. This is owing to the general acceptance of the same kind of machinery to perform the work. No sooner is a labor-saving machine invented in one country than it is copied entire, or in its essential parts, and used in every country where it is needed.

WHAT EUROPEAN TECHNICAL AND POLYTECHNIC SCHOOLS HAVE EFFECTED.

America and England have supplied the rest of the world with more practical help in this way than all the other nations put together; yet with all this start, the other nations are creeping up to these in industrial progress.

The Technical and Polytechnic Schools have greatly helped to effect this result; while, upon the other hand, Austria, Germany and England, have, by diligent attention, greater or less in degree, paid to the subject of Art-industry, gradually neared the two nations so long famous for fine work, industrial and artistic—France and Italy.

UTTER INFERIORITY OF ARTISTIC INDUSTRIES SHOWN IN VIENNA BY THE UNITED STATES.

The United States is not in the race, if we may judge her by what was exhibited in the American section of the Vienna Exposition. Not that it was worthy in any respect of the position we occupy among the nations of the earth, though we secured more prizes in proportion to the number of exhibitors than any other country. Those prizes were all awarded upon the basis of industrial merit. The artistic element was *nil*, if we except Prang's chromos and the photographs exhibited. The first germs of a change in this respect were shown in the School Group; viz., samples of drawings executed by the pupils of our common schools and by students of the evening classes established in several of our large cities. It was but a grain in that vast granary, but any one who took the trouble to compare these drawings with those exhibited as the work of the pupils of a similar grade in the Austrian, Swiss or German section, found that their merit was as great as that of the others notwithstanding the much shorter period this kind of instruction has been imparted to the young scholars here. This is a small but very encouraging fact. Those countries that have not paid the same attention to Art-industrial education as have the principal nations of Europe, were poor in proportion in their exhibition. Pages 128-130. * * * But it must be remembered, that if we want quick and valuable results, our outlay and exertions must be in proportion to our desires. To give a lukewarm support to the movement, and then, ten years hence, grumble because we have not effected as great changes as other countries in a like period of time have done, would be but a sorry way to bring about a beneficial result, though it is what is likely to happen unless a very strong interest is aroused in the public mind in behalf of the idea.

OTHER EUROPEAN COUNTRIES FOLLOW THE EXAMPLE OF ENGLAND.

In England, it is the fashion to grumble and growl at the amount of work performed by the South Kensington Museum and Schools, and their method of doing it, even for those who are ignorant of what is really accomplished. The work has been somewhat marvellous in extent and rapidity of execution, as is fully shown by the opinions of the critics and observers who are not English.

That Austria believes in following the example set by the English is plain from her actions, as is also the case with most of the German States, who, if they have not already established Museums and Schools on the South Kensington plan, propose to do so in the near future, to supplement their already existing systems of technical and artistic instruction. Even Italy moves into line notwithstanding that her name is almost synonymous with the Beaux Arts. France early acknowledged the value of the movement, and her recorded statements are curious but clear proofs of how soon it is possible to inaugurate a new reign of taste, and create the skill to meet it. Page 133. * * * The South Kensington Institution has so far achieved one of its objects for the good of the people as "to teach them not to be satisfied with mere empiricism; to show them how Science may be applied to their work, and to induce them to follow it up."

INDUSTRIAL ART OPENS NEW OPPORTUNITIES FOR WOMEN.

The exhibit made by it at Vienna, though not at all equal to the high position it occupies in the world, showed that it had also been enabled to help to bring about a solution of another important problem; i. e., the enlargement of the confines of women's work. Many of the students at South Kensington are ladies, who have, through its agencies and teachings, been enabled to earn a fair competence for their work, this, in some instances, being entirely new to the industries of England. Examples of women's work were shown in the hall occupied by the South Kensington Museum at the Exposition, consisting of designs for Lace, Fans, Etchings—an old art revived—Decorative Wall-paper, and other Art-industries. Pages 150, 151. * * * Instances were not lacking among the seven hundred and fifty British exhibitors, serving to illustrate with more potency than the official display of student's work, the beneficial influence of the South Kensington School of Art.

HOW ART QUALITIES INCREASE VALUES.

Here is an illustration: Messrs. Doulton, of London, amid their multifarious display of sanitary earthenware, drain-pipes, plumbago crucibles, terra-cotta, and domestic utensils, such as water-pitchers, drinking-mugs and jars, showed a set of this latter kind of ware that consisted of real objects of Art, both as to form, coloring, and the designs upon them.

These have all been made within the last two years. The material used is the same as that from which the old brown "Tobies" are made, so common in the English country ale-houses, and with which nearly every one is familiar, in the form of the earthenware teapots, sold by all dealers in like commodities.

One of the firm (Mr. James Doulton) illustrated in a most forcible and direct way the value of Art-taste in works of industry, by a simple method. Selecting two pitchers from his collection he said: "This is an old-fashioned jug worth ten pence; this other one, made from precisely similar materials, both in quality and quantity, is an example of our new style, and is worth ten shillings." The difference consisted in the improved form and simple quaintness of the designs burnt on the sides of the new examples of the potter's art. No two are made alike.

HOW INDUSTRIAL ART GIVES NEW OPPORTUNITIES TO WORKERS.

"The artist workman who has shown an aptitude for this work is the son," says Mr. Doulton, "of a journeyman wheelwright, and would in all likelihood have continued a wheelwright like his father, if there had not been a local branch of the South Kensington School near his home to which he went, out of curiosity in the first instance, and afterward continued to attend because of the new and absorbing interest awakened within him. At this school the manufactory found him, and drew him to a field of usefulness where he could turn his developed talent to account, not only to the profit of himself and his employer, but to that of the nation. Some other less apt and artistic man could fill the wheelwright's position which he vacated."

Mr. Doulton laughingly said that his old brown pitcher was one of the objects collected by Mr. Cole to form what he termed his Cabinet of Horrors; i. e.; objects in every day use, devoid of taste, art, or beauty in any shape. It is devoutly to be hoped that no one will act on his idea and make a similar collection on this side of the Atlantic. Pages 151, 152. * * * One fact is proven, standing firm as a rock, by the united testimony of all the European savants, who claim to speak with authority on this subject; that is, that if any improvement is to take place in the Art-Industry of the country it must come from the better education of the people in Art, and this must commence with popular instruction in free-hand drawing. It is also shown that such knowledge as is imbibed at the Drawing School, the Technical Educational Class, Art-Gallery, and the Art-Industry Museum; educates men to feel more interest in their work; that new methods of doing old-time work suggest themselves to the man who has been taught in the principles upon which the success of his work depends; and finally that a vast improvement can rapidly be brought about by earnest work, even though it be true that—

"So slow is
The growth of what is excellent—so hard
To attain perfection in this nether world." Page 156.

Those who saw the showing made by the Messrs. Doulton, at the Centennial Exposition in 1876, and at the Columbian Exposition in 1893, had a notable object lesson in observing the wonderfully beautiful and varied results which had developed with surprising rapidity from the first introduction of an artistic purpose into the erstwhile prosaic pottery; where only drain pipes, brown Tobies, and similar inartistic objects of mere utility were wont to be made.

It reminded one of the prolific growth of the Banian tree, whose drooping branches speedily take root and ere long the single tree has become a wide spreading grove, so, looking on the precious Art potteries, the artistic examples of Lambeth Faience, and the exquisite porcelains, all shown in such profusion, by the Doultons, at Chicago, and recalling the homely articles of their pre-artistic period, one could but marvel at the wonderful transformation here wrought by the magic of Art; since first the artist John Sparkes, master of the Lambeth Art School, entered into an alliance with the potter, Doulton; thus repeating in our day, and with like success, the historic Art partnership of the artist Flaxman and the potter Wedgwood.*

* For a concise account of this coöperation between the Art School and the Pottery, see note to page 643, in Part I of this Report. Consult also, titles "Doulton," "Sparkes," in Index to "Part I," and "Lambeth Pottery," in Index to Part V,

Such instances emphatically show how Art may delight and enrich a people, and how public education in Industrial Art is of practical pecuniary importance to a Nation.

SELECTIONS FROM REPORT BY MR. F. D. MILLETT, SPECIAL COMMISSIONER OF MASSACHUSETTS TO VIENNA UNIVERSAL EXPOSITION, 1873.

Fine Arts of the Present Time—Group XXV—Paintings and Sculpture.

PART I.—PAINTINGS.

It was the original intention of the Directors of the Vienna Exposition to invest the Art Department with a character not unlike that of the annual exhibitions held in almost every large city in Europe, and to assemble at Vienna pictures from every country, which would represent the art of the present day, and indicate the artistic development of the world within the last decade. In a very mild degree was this plan followed, and instead of an exhibition, we had a museum; and the distinction is a strong one. An exhibition proves what the artists of the present generation can do; a museum shows what artists have done, and is a collection of superior or curious specimens of Art, made up regardless of the date of production. Page 157. * * * In its character of museum, the art department was one of the grandest displays of the century, and after the elimination of the works which, from their universally recognized merits, serve as models for the direction and instruction of artists of to-day, enough remains in almost every section to give a hint of the current of art in the country there represented, and to show its capabilities, its tendencies, and its natural character, if it has any. France, England, and Belgium, more than any other countries, borrowed the treasures of the State galleries, to grace the Art halls at Vienna, and Germany, Austria, Italy, and the rest sent comparatively weaker, but more truly representative collections.*

WHY WITH ADMITTEDLY SUPERIOR TECHNIQUE, DO MODERN MASTERS FAIL TO EQUAL THE GREAT OF OLD?

In the presence of as magnificent a collection of pictures as was shown in Vienna, it can hardly be denied that artists have gained in at least one direction, and that this progress, if continued in the free and untrammelled course that art at present claims as its own, will result in a higher development of artistic culture, and in the production of works nobler and purer than any creations of the past two centuries. This progress is in the direction of expression; and in the refined subtleties of this quality of artistic power, it is clear to my mind that we of to-day are in advance of any age. Not that any one example of superior refinement or truth of expression can be produced which will surpass some of the sublime monuments of the skill and genius of the old masters, but the faculty of comprehending and analyzing expression, and the facility of illustrating it, are much more widely spread among artists of the present day, than ever before. And why is it, then, that the majority of pictures leave the spectator passive and unimpressed? Because the artists themselves, as in every period in the history of art, too often paint with little or no sympathy with their subject.

WHAT CONSTITUTES GREATNESS IN ART?

The great triumph of art is to produce in the spectator feelings akin to those experienced by the artist; to awaken in the depth of the soul, some passion long dormant; to appeal to the inmost nature with a voice that demands recognition, and thus to bring all men to the common level of humanity, endowed with the same faculties, moved by the same feelings. As the king and the peasant both bow

* Germany contributed 753 paintings and 194 statues; France 664 paintings and 196 statues; Austria 436 paintings and 198 statues; Italy 340 paintings and 259 statues; Belgium 217 paintings and 20 statues; Holland 164 paintings; Hungary 112 paintings and 27 statues; Switzerland 108 paintings and 35 statues; Russia 104 paintings, and 44 statues; Spain 90 paintings and 30 statues; England 72 paintings and 22 statues; Norway 58 paintings and 1 statue; Sweden 35 paintings and 2 statues; Greece 24 paintings, and 22 statues; America 17 paintings and 1 statue.

to the same holy symbol, so do they meet on the common ground of human passions and feelings, in the contemplation of a noble work of art. Pages 158, 159. * * * The peculiar circumstances which controlled the enlistment of artists in the time of the old masters, were calculated to sift out from the ranks many of those who could not keep pace with the soaring spirit that inspired the true artist. The limitations of art have been removed, the field of action is broader and more comprehensive than ever before, and the qualifications of artists have diminished with the increase of the branches of art in which it is comparatively easy to become, by courtesy, an artist.

WHEN ART IS TAUGHT AS A TRADE, THE ARTIST DISAPPEARS.

With the introduction of the academic system grew up a cold, passionless and formal manner, and thousands, even in the present day, annually learn the trade of artist, with the same ease as they would learn to become blacksmiths or shoemakers, and with much the same idea. While the true artist will rarely fail to find his way to the fountain-head, notwithstanding the enervating and withering influences of academic training, an army of worse than mediocre painters and sculptors is raised up by this system, and their pulseless productions cover the walls of our picture galleries, or pall upon the visitor from stilted pedestals.

It is not my intention to discuss the merits of the academic system, or even to attempt to support the opinion which I entertain, that we would be worse off without these institutions, for this argument would occupy a great deal of space, and the simple statement that all academies are rapidly acquiring the character of the old studio system, and are developing individuality and encouraging originality, is enough to answer the most valid objections to them.

HOPE FOR ART DEVELOPMENT.

Another tendency in art has a double signification. This is the admiration for truth of tone which is happily gaining ground among painters. In a material sense, truth of tone adds greatly to the value of the work as a mechanical production, and, in a higher sense, it is absolutely necessary to the perfect expression of an idea in painting. Examples of the perfect harmony of tone with the sentiment expressed will be found by no means rarely in the review which follows. Black and white illustrations do not impress to the same degree with paintings, and when falsities of tone prevail in a picture, to a sensitive eye the force of color is nullified, and the idea might have been better expressed by a photograph or a print.

THE ART OF FRANCE.

The great characteristic of French art is its impressibility, and by this quality alone it ranks above every other national art, or school, or whatever it may be called. The French are more truly artistic by nature than their contemporaries, and their capability of seizing the salient points of a subject, the characterizing lines of the expression of any idea, no matter how trivial, is beyond dispute. Endowed with these high artistic faculties, and enjoying the advantages of an art education superior to those offered by any other country, it is not surprising that French art takes the lead. As we find the most brutal and disgusting vices go hand in hand with the highest efforts of civilization, so, joined with these superior powers and rare capabilities, we meet with the most ignoble creations and worthless trivialities, often in the garb of masterly execution—an incongruity rarely found outside the ranks of the French artists. Pages 159-161. * * *

PART II.—SCULPTURE.

The Sculpture in the Exposition was a disappointment to every lover of true art; not that there were no good productions in this branch of art, but the proportions of even mediocre works to the whole mass was very small, and in this short list the really excellent examples may be counted on the fingers. The sculpture of the present day seems to be going hand in hand with the fashions, and cases are unfortunately, far from rare where the artist has debased his material in the perpetuation of an idea, of a pose, of a costume, that would do no credit to the rudest clay that was ever worked by the hand of a sculptor. The same taste that inspires the florid decoration of every subject that will bear ornamentation, that disfigures the human form by supplementing shapeless masses to its graceful contours, and entirely contradicts the first idea of drapery, the same taste that encourages and

stimulates all that is artificial and imitative in opposition to the natural and original, bids for the representation of these ideas in the same material that has immortalized the grandest conceptions of the artistic mind. The sculpture is less distinctly divided into schools than the painting, and the differences are slighter, and there are more general resemblances between the productions of the different nationalities. In every department where the collection of statuary was of sufficient extent to warrant a judgment, the tendency seemed to be toward the trivial and the forced sentimental, while the serious ideas found only rare exponents.

The Italian list of statuary was by a great deal the longest, and in exactly inverse proportion its merits may be measured. Good cutting, perfect manipulation, the most skillfully imitated textures and modelling fine in a weak way, all this certainly was seen in the Italian works. No one can deny the skill of the practiced marble cutters of Italy. With this perfection of mechanical execution the merits of the Italian marbles stop. Pages 211, 212.

REPORT BY WILLIAM P. BLAKE, SPECIAL COMMISSIONER FROM MASSACHUSETTS
TO VIENNA UNIVERSAL EXPOSITION OF 1873.

Ceramic Arts at the Vienna Exposition.

GENERAL SURVEY.

The potters' art, one of the most ancient and the most universal of all, connects itself on the one hand with geology and chemistry, and on the other with painting and sculpture. It is the outgrowth of one of the primal necessities of man's existence—the preparation and distribution of food—and is thus intimately identified with domestic and social life. Its productions, though so fragile, are perhaps the most enduring of man's handiwork. The objects that have outlived history, are to be viewed not only as specimens of the condition of the art at the time of their production, but as exponents of the habits, the domestic life, and the aesthetics of races long since passed away. There is no other material which can be so readily impressed with the conception of the artist as "clay in the hands of the potter."

PROGRESS AND CAPACITY OF THE ART.

Such an art should progress measurably in the same ratio as civilization. That it has so progressed is evident to all who saw its representation in the Halls of the great Exhibition at Vienna in 1873. The most general and striking impression produced by a systematic survey of what was shown there, was the *vitality* of the art and the high degree of excellence it has reached, not only in one or two countries, but in many. The rapid progress in the manufacture of porcelain and earthenware in several countries since the commencement of the era of industrial exhibitions, shows the capacity of the art for development in any country. Excellence is by no means confined to any section, or any special source of materials. Chemistry has so far unlocked the secrets of the manufacture that it is no longer confined in empirical hands, or limited in its range or locality. A few decades ago the knowledge of the details of compounding the materials for porcelain-ware, or for the glaze and decoration, was centered in but few persons. It was guarded as a secret; and the death of a master was perhaps the death of his art in the range of his labors; but now principles survive individuals, the art is universal, and seems established on an enduring basis. Chemistry has also given pottery a new life, and has enlarged the range of its uses, and has extended its capacity for decorative and ornamental purposes.

The great capacity of the potters' art for advancement in many important directions is one of its greatest attractions. The increasing use of fictile productions for ornamentation, not only in the interiors of our houses, but in the exteriors, in the form of enamelled tiles, plaques, medallions, terra-cotta ornaments, and bricks of various forms and colors, is highly gratifying, and marks a new era in the modern development of ceramics. But the capacity and known possibilities of the art are far beyond the artistic sense and appreciation of the people.

NECESSITY FOR INSTRUCTION IN ART.

What is now needed is not so much the possession of materials, of knowledge, or even of artistic skill, as the elevation of the public taste, so as to create an appreciative and large demand for the products of higher efforts and greater skill. The manufacturers need encouragement and appreciation. The industry requires an

artistic sense among the consumers of its products. If the public will not buy superior goods, the manufacturer cannot make them without loss.

It is true that to a certain extent manufacturers should lead public taste; and no doubt their duty in this respect is not always appreciated by them, but it is well understood by some of the great establishments abroad, and they are reaping rich rewards. Wedgwood, in striking out a new path, not only secured immediate support, but established a reputation of far greater value. Palissy's art survives him and is the basis of an extensive industry. But the people generally yet need to know more of pottery as an art to secure a fair appreciation of novelties and to stimulate progress. A great obstruction to progress is the servile following of others, the constant reproduction of old forms and old designs—imitations rather than novelties.

CAUSE OF THE SUPERIORITY OF EUROPEAN CERAMIC ART.

The high development and perfection of the ceramic art in Europe is due, in a great degree to the establishment of porcelain works under government protection and favor, and the rivalries between them. Each establishment became a school of art, producing models for imitation, launching out into unknown fields, experimenting and perfecting without regard to the demands of trade,—being raised above them, and independent of them. They became leaders of public taste, and their influence was strengthened by the patronage of royalty and court circles.

The exhibition of 1851 revealed to Great Britain its manifest inferiority in artistic manufactures; and it did not take long to ascertain that the cause was the neglect of art-education amongst the people, while the continental artisans were taught with the greatest care, and familiarized from their youth with the choicest productions of ancient and modern art. It was conceded that the art schools and Museums of France exercised a great influence upon the manufactures of the country. England saw that to compete with such a rival great efforts must be made, and that the people must be educated. The government took the matter in hand; it was studied and reported upon by government commissions, money was freely appropriated, museums were founded, and a Department of Science and Art established as a branch of the government.

The favorable influence of these efforts was apparent in Paris, in 1867; it was still more evident in the London Exhibition in 1871, and was abundantly shown at Vienna. Great Britain, from a position of mediocrity in 1851, has risen to a commanding position in the potters' art, standing to-day in the front rank, not only as regards excellence of materials and manufacture, but in artistic skill.

A LESSON FOR AMERICAN EDUCATORS.

All this is full of teaching to the educators of the United States. Ceramic industry, as we shall presently see, is already established here, but, though in its infancy, gives promise of a great future. Its growth can be greatly and advantageously modified by a little well-directed effort. Art education is not only required by potters, but by all artisans, and by the people generally. It not only produces skilled specialists, but becomes diffused, and raises the standard of public taste, increasing the appreciation of the public and the demand for really meritorious works, thus reacting beneficially upon the industries.

There is a great multiplicity of sources of designs for ornaments at the present day; and the facilities now afforded for copying and reproducing the most precious artistic works of the past should cause them to be seen everywhere. Every town should have its art-gallery and its classes for drawing and modelling. The children in our public schools should not lose such influences as may be exerted by the possession of sets of casts of architectural decorations, of sculpture and bas-reliefs, all of which may be procured for little above the cost of the materials and transportation. The general influence of art museums abroad is not to be lightly estimated. They are exerting a gentle and imperceptible, but a most powerful influence upon the culture of the communities in which they are located. Who can estimate the influence exerted by the South Kensington Museum upon its millions of visitors? And we are not to lose sight of the influence, also, of the great exhibitions which bring together in friendly rivalry the master-efforts of the most skillful artisans of the time, and afford the conservators of museums their richest harvest of novelties and gems of excellence from all lands. These are the most powerful of all agencies in the education of the people, and they afford the most salutary stimulus to the artistic industries, especially when the producers have access to typical examples of the best efforts in their arts by the generations that have passed away.

The effect of museums and systematic art education in France is spoken of by the reporters on porcelain in 1871, as follows: "The tradition of past generations of art-workers still lives in France, and is kept alive, not only by countless examples of their skill, happily preserved in many noble museums, but also by a systematized education of artists, which alone is capable of directing onward in its proper course and maintaining constant, a National School of Art." *

MUSEUMS OF CERAMIC PRODUCTIONS.

What we specially need, then, in the industry to which these pages are devoted, is a well-chosen collection of all the best examples of the potters' art, in all ages, and from every country. New York already has the nucleus or commencement of such a collection † in the Metropolitan Museum of Art, where the unrivalled collection of Di Cesnola presents a great wealth of examples in earthenware, and terra-cotta, of the Phœnicians, ancient Greeks and Romans. This is supplemented by a Loan Museum, chiefly from the private collection of Mrs. W. C. Prime, in which there are excellent specimens of new and old Sevres, Dresden, Austrian and English porcelain, of delft ware and Saracenic tiles. A somewhat similar collection exists in the Athenæum, Boston, and contains some excellent examples of old Sevres, Chinese ware, *pâte-sur-pâte*, an imitation of *Henri-deux* ware, etc., some of which were obtained at the Vienna Exhibition.

These museums are already exerting an influence upon the public in directing attention to the preservation of old and curious pieces of porcelain, and the formation of private collections. Although many such collections are made merely for the sake of getting together odd and rare bits of old china to which a fanciful value is attached, without any comprehension of the nature of the art, or its history, the weakness is by no means to be discouraged, for sooner or later the possession of the objects leads the owner to look beyond them to their origin, and to a comparison of the products in all their qualities of material, form and decoration.

Those who are disposed to make a study of this fascinating subject may derive great assistance from a collection of typical examples of modern productions that can readily be made by themselves at no very great cost. For such an undertaking, students in the United States have great facilities, in consequence of the very general representation of the chief manufactures abroad in the large stocks of ware kept on hand in our principal cities. There are, at least, two establishments—that of Mr. Richard Briggs in Boston, and of Messrs. Tyndale and Mitchell in Philadelphia which may be regarded as museums of the art; for the proprietors, being enthusiasts in their specialty, take great pains to collect and retain examples of all varieties of manufacture and decoration, and even make visits to Europe to secure representative examples and novelties.

COMMERCIAL VALUE OF ARTISTIC SKILL.

The United States are destined to become the best market in the world for artistic productions. This results from the very general distribution of wealth among the people and the desire to adorn their homes with the same class of objects sought and admired in communities of riper civilization and culture. Money, for a time at least, anticipates appreciation; but the latter, as already shown, is sure to follow. Economists should not lose sight of the expanding fields of industrial effort which are opened in every direction by increased appreciation of, and demand for, artistic productions amongst the people. It leads to a great variety of manufactures and a rapid increase of wealth. Whole communities are sustained abroad in the production of trivial ornaments. When we consider, also, the great increase in value with which the commonest materials may be endowed by a little artistic skill, we do not hesitate to recognize the commercial value of such skill to the country. The clay which is so abundant under our feet is transformed by the potter into an

* Magniac and Soden Smith, *On Porcelain*, Lon. Exhib., 1871, I., p. 258.

† An important portion of this collection consists of over 4,000 earthenware vases, discovered in ancient tombs at Idalium, a Phœnician city which was conquered by the Greek colonists of Cyprus several centuries before Christ. These vases are perfect in form and fresh in color, and are ornamented according to the fancy of the potter, without any special regard to their size or capacity. The colors are generally only two; a dark brown, almost black, and a purple red. This last appears to have been produced by an oxide of copper, and the brown by umber, an earth which occurs abundantly in Cyprus. The decorative patterns are usually concentric circles and chequered designs, sometimes intermingled with the lotus.

object of beauty. A single slab of earthenware, which may be produced for a few cents, becomes of almost priceless value in the hands of the artist. The enamels of Parvillée and the plaques shown by Deck in the exhibition are examples. The prices which such objects command are astonishing to those accustomed to the merely utilitarian view of things. The British artisan who reported upon the pottery, in mentioning Deck's beautiful plaques, says: "The most attractive were several large round plaques, about two feet across, painted with large female heads and other decorations. I saw one of them was bought by an English manufacturer. The price paid was £200. Here is an example of art workmanship. This dish, which realized such a large amount, could be made and sold by the gentleman who bought it for about two shillings; and the artist, with his labor, has made it worth £200." Pages 216-222.

IV.

EXTRACTS FROM THE AUSTRIAN OFFICIAL REPORT ON THE VIENNA
UNIVERSAL EXPOSITION OF 1873.

In addition to the extracts from the official reports of Great Britain and Massachusetts upon the Vienna Exposition, the following, taken from the Austrian official report,* will be found of interest. Extracts from the valuable introduction prepared by the late lamented Mr. Stetson for the American reader, and from Professor Langl's report on the various countries, as well as his entire report upon America, are given.—Want of space compels the omission of much of Mr. Stetson's economical argument which is based upon statistics, and of many of Professor Langl's observations and conclusions. The student who is interested in a further investigation of this subject of Industrial Art Education will find much of value in the work from which these extracts have been taken.

MODERN ART EDUCATION.

AMERICAN PREFACE.

[By CHARLES B. STETSON.]

At last on this side of the Atlantic an earnest, wide-spread activity in behalf of popular art education is beginning to manifest itself, not only among educators, but among business men, distinguished for the interest they take in the development of American industry. As to the character of this activity, different opinions prevail. Some declare it is a mere educational spasm which will soon pass away; others declare it is only the beginning of what we are to see,—of a new era in education. That the latter are right, that this new-born activity is justified by enduring considerations of educational and industrial policy, a survey of the more conspicuous facts will make evident enough. This survey must embrace not only the field at home, but the foreign as well.

AN AGE OF INDUSTRIAL CONFLICT.

While no one can say that the time approaches when Europe will cease to "tremble under the drums and trampings" of martial hosts, yet it is very clear that she is now to behold a long age of industrial conflicts among the leading nations, with issues quite as momentous as any that were decided at Waterloo or Sedan. This age has fairly set in, as a glance at the past, by way of comparison, will show.

*Modern Art Education: Its Practical and Aesthetic Character Educationally Considered, by Professor Joseph Langl, of Vienna. Being part of the Austrian official report on the Vienna World's Fair of 1873. Translated with notes by S. R. Koehler, with an introduction by Charles B. Stetson. Boston: L. Prang & Company. 1875 [with American preface] Pp. 211.

At the beginning of the present century, it was the well-drilled soldier upon whom the different nations of Europe relied for defence; the well-trained workman counted for little. To be sure, Napoleon, when first consul, recognizing the vital importance of industrial education, took vigorous measures to promote it in France. But education is a plant whose fruit does not mature in a year, nor all at once; and the first half of the present century was required fully to convince Europe that the workman should be specially educated. Meantime, America was developing the public school as a means of popular culture. To-day Europe is successfully combining the two lessons,—industrial instruction, and general culture, of the whole people. The different governments realize that henceforth national supremacy must depend more and more upon industrial supremacy; and so for this peaceful warfare, not the less real because bloodless, each is arming itself with the best weapons that art and science can furnish. In the camp soldiers are drilled no less than of old; but, in the schools, children and youth are trained with a direct view to labor as they never were trained before. Of all things, the pencil is recognized as the most efficient ally of the needle-gun. While the latter wins victories on the field of carnage, the former wins them in great industrial tournaments that bring together the rival products of the whole working world. In the one case it is a battle of bullets, in the other a battle of forms; and Europe has learned that provision should be made no less against defeat in the battle of forms than in the battle of bullets.

While America, as yet, has done almost nothing for the direct education of labor, how munificent the expenditures made for this purpose by European governments! how broad their view, and how thoughtful the adaptation of means to secure the end desired! They rely upon no one thing; but, beginning the work in elementary schools where all can be reached, they carry it on through evening schools, through Sunday schools, through schools for special industries, even in towns of one or two thousand inhabitants, through schools of arts and trades at frequent intervals; they advance it by popular lectures, by local museums, and by oft-occurring exhibitions; they complete it in great central technical universities and art museums, with their numerous and comprehensive courses. Thus they provide for all ranks in life, for all the exigencies of art and of industry. To-day, in the workshops and manufacturing establishments of Europe, there are *millions of men and women* who have been trained more or less efficiently, during the last twenty years, in art and science applied to industry. Is not this a noteworthy change of public policy on the part of European governments?

Let us consider what the leading European nations have done and are doing for the advancement of the art-industrial education of their people.

ART-INDUSTRIAL EDUCATION IN ENGLAND.

For this new conflict England is, with the utmost deliberation, thoroughly arming herself. At first, she began with half measures which need not here be further described than by saying that she undertook to educate her workmen *only after* they became workmen, and gave little thought to artistic qualities, relying upon cheap production, good material, and honest workmanship, to find a profitable market for her manufactures. She was the first to challenge the world to a comparison of industrial products, and in 1851 held the first Universal Exhibition at London. The result every one knows. As to products involving taste, that which adds so much to market value, she found herself far below her European rivals, and above the United States alone. Profiting by her unexpected and humiliating defeat, she at once abandoned her old educational policy, which was based mainly upon the let-alone principle, and went vigorously at work in the faith that instruction in art, as applied to industry, could be reduced to rational methods, could be treated according to recognized educational principles, and so need not longer be left to the fancy of each individual, nor to the blind caprice of the hour. There was formed in the Privy Council a new section, under the name of "Science and Art Department," which has, for its special object, the popular dissemination of a knowledge of science and art as applied to industry. Thus far the department has more especially devoted itself to the advancement of drawing and the arts of design. In 1852, the South Kensington Museum, which receives an annual grant from the government of about five hundred thousand dollars, was founded in London at an original cost of some six millions of dollars. Besides giving general instruction in fine and industrial art and sending out numerous travelling collections of art objects for local service, this school provides special training, free of cost, to those whom the government selects as the most promising candidates for art-masters, and who, upon finishing the course, are expected to take charge of art schools in different parts of the kingdom.

LOCAL CENTRES OF GOVERNMENTAL ART INSTRUCTION IN GREAT BRITAIN.

Thus the South Kensington Museum is the great centre of art instruction for the whole kingdom; but it is only the centre. The educational influence of the government is felt everywhere; and, in all important industrial localities, art schools for instruction in drawing, modelling, and design have also been established. These schools, under the direct supervision of the Science and Art Department, are sustained in part by the government, in part by the local authorities, and in part by fees; it being the principal object to improve manufactures by making them more artistic, and to promote machine and building construction. They continue to increase from year to year. According to the official report for 1872, they numbered 122, and were attended by 22,845 students; to whom add the 765 students who attended the National Art Training School at South Kensington. Thus for every 210,000 of the population, there was one well-appointed art school, wholly devoted to art instruction, with an average of 190 students. There was also a large number of science schools in which drawing was taught, 69 submitting papers for payments and prizes. Of night classes for giving instruction in drawing to artisans, and to youth more than twelve years old, there were 538, with an attendance amounting to 17,256. Then it is not to be overlooked, that drawing forms an important part of the instruction given in elementary schools, both public and private. Thus, in the "schools for the poor" alone, 194,549 children were instructed in drawing, in 1872. And so a more or less efficient knowledge of art, as applied to industry, is rapidly spreading among all the industrial classes of Great Britain.

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ART-INDUSTRIAL EDUCATION IN FRANCE.

First fruits of systematic English art education soon began to manifest themselves. At the Universal Exhibition, held at London in 1862, the advancement in English art manufactures, since 1851, was clearly shown; and the French, ever sensitively alive to their industrial interests, took alarm. Such great results so soon achieved, what might not be expected in the future! France saw, indeed, that it was not safe to rely upon prestige, however distinguished: she saw that to stand still was to go to the rear; she saw that to maintain her position, so long indisputably held, at the head in art manufactures, she must advance.

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One of the main objects of the Universal Exhibition held at Paris, in 1867, was to stimulate and unify the art-industrial education of France. Since the disastrous war with Prussia, educational problems—general, industrial, and military—have received more solicitous consideration than ever before at the hands of the French authorities, both national and local. Indeed, with French education of all kinds, the present is a reconstructive period,—a fact that appears to be overlooked by those who so vehemently urge us to imitate the art instruction which has hitherto prevailed in France. However well this art instruction may have served its purpose in the past, France herself, by attempting many decided changes, acknowledges that it is unequal to the present demands,—that, in competing with thorough instruction based upon art-science, her traditional methods cannot stand.

ART-INDUSTRIAL EDUCATION IN GERMANY.

Germany shows that she too feels the impulse in favor of art industrial education; her activity, however, would have doubtless been more marked but for the military exigencies of the last fifteen years. With German unity secured under the leadership of Prussia, it is probable that the development of industry by educational means will henceforth receive much greater attention. But, in the past, art-industrial education has not been by any means neglected. Not only in all the larger towns of the different states, as in Nuremberg, Munich, Berlin, have there long been liberal provisions for the special training of art-workmen, but there have been similar provisions, oftentimes quite ample, in many of the smaller towns,—even in towns of one or two thousand inhabitants. Now comes a fresh impulse, and things old are taking on a new face. The late war taught France a valuable lesson; and from France, defeated and prostrate, yet promptly paying her forfeited milliards, Prussia also learned a lesson, and means to profit by it,—the lesson that art-industrial education contributes to the prosperity and grandeur of nations. "Immediately after the war with France," as Prof. Langl says, "the authorities of the various industrial towns of Prussia were called upon, in a circular issued by the Ministry of Commerce and Industry, to follow the example of France in the

organization of Drawing and Industrial Schools; and their attention was directed to the industrial importance of these schools, and to the fact that they form the true basis of the wealth of France. Regulations in regard to teachers of freehand drawing and modelling in the industrial schools were prepared at the same time."

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ART-INDUSTRIAL EDUCATION IN AUSTRIA.

The movement in favor of art-industrial education has not only extended to Austria, but is more marked than anywhere else. Indeed, Austria is the most thorough educational reformer in Europe to-day. Since her defeat by the Prussians at Sadowa, in 1866, she has devoted herself to the education of her people, fully resolved to win back, by the achievements of her educated industry, all she lost on the field of battle. Her schools for the education of the great body of the people, which were pronounced by Horace Mann to be among the very poorest in Europe thirty years ago, are to-day pronounced by excellent educational authority (John D. Philbrick) to be the best,—best in their organization, in their course of study, and in the character of their instruction. Nothing has been done at hazard; but the whole of this remarkable educational reform is based upon the soundest educational philosophy, and so must yield good results for generations to come. The art-industrial features are very conspicuous, as will be seen upon reading the report which follows.

It may justly be said that the chief object of the Universal Exhibition, held at Vienna in 1873, was to stimulate the Austrians, educationally, by showing them what is done elsewhere for industrial education, and the result as illustrated by industrial products. At this exhibition, the educational display was the largest and best ever seen, and so was of special service to educators. Already, too, the good influence of the exhibition on the public taste has begun to manifest itself, as the Austrian minister at Washington most emphatically testifies in a recent address.*

* At the meeting of school superintendents, recently held in Washington, the Austrian Minister, Baron von Schwarz-Senhorn, was present, and spoke of the educational advantages and influences of expositions:—

"You remember, gentlemen, there was an old European general by the name of Montecuculi, who said, that if you are preparing for war, and wish to become victors, you must have three necessary things: first, money; secondly, more money; thirdly, much more money. Now, I think every teacher is a general; that is, he is a combatant of ignorance and of superficiality. Now, I think that the want of knowledge is the root of all evils that exist in the world, and that they can only be successfully combated by three things. These three things are, first, education; secondly, more education; thirdly, much more education. I think, too, that the education of a people must begin in the family circle, and that then every man, every woman, every village, municipality, and corporation, and every State government, and the general government itself, must aid and contribute to the accomplishment of this vitally important object. * * *

"A great German savant, Prof. Virchow, made a very interesting and a very accurate remark, which could apply here. He said that 'nothing which comes through your eyes into your head ever goes out.' And so say I. The impressions which we obtain by the sense of sight affect the brain, and change our views, in the most favorable manner. That was the meaning; and the man who has seen many things, who has travelled a great deal, will have his intellectual faculties greatly improved. We observed in Austria, as well as in other parts of Europe, another striking effect of these exhibitions. They improve, in a remarkable way, the public taste. The taste in former times in Austria was also a bad one. The people had not seen examples of tasteful and beautiful productions; they had, therefore, no artistic judgment. They had no museums and schools for applying fine arts to industry, for improving and correcting their taste, and for thus giving them the right ideas of the beautiful. The consequence was, that in their buildings, furniture, and other things of common life, no taste was shown. But now, within a few years, and especially since the Universal Exposition, and the establishment of museums and schools, there has been a remarkable improvement.

"Allow me to say, gentlemen, that a sincere friend should speak the truth; and that as a sincere friend of America, who has the greatest sympathy for its people, in whose country I have learned, since my short stay of six months, a great deal, and where I hope to learn much more,—it is my duty to say to them, in all truth and candor, that their public taste is in the same awful condition as was the public taste in England before their great exhibition of 1851."

ART-INDUSTRIAL EDUCATION ELSEWHERE.

But the movement in favor of art-industrial education is by no means limited to England, France, Germany, and Austria; it pervades all Europe,—the small states as well as the large. Even Russia forms no exception; within the last eleven years she has established various art schools modelled after the English, and it is said that they have “greatly stimulated and improved the national taste.”* There is, indeed, but one opinion throughout Europe as to the importance of art-industrial education, and as to the wisdom of making it universal. In this connection it is well to note that the methods adopted by England for promoting this education are generally imitated. Even France, so long the leader of the world in matters of art, has of late been taking lessons of her neighbor across the channel.

A LESSON FOR AMERICANS.

Now, to mention nothing more, can it be doubted that the three things named,—1, the great relative increase of the manufacturing interests and of the artisan classes; 2, the greater desirability of manufactures which involve skill and taste; 3, the greatly widened and intensified competition of the market,—can it be doubted that these three things alone fully justify the efforts made by European governments in behalf of general art and industrial education? And can it be doubted that this country ought to take seriously to heart the example of its great industrial rivals? While we guard the traditional “Monroe Doctrine” so vigilantly, warming up to a white heat, as we are so apt to do, whenever a foreign power shows an inclination to appropriate to itself a foot of soil, or otherwise to extend its direct political influence, this side of the Atlantic, shall we take no note of that vast army of workmen which Europe is specially training for the industrial conflict, and which we must meet not only when we venture abroad, but even when we remain at home behind tariff barricades?

THE MARKETS OF THE WORLD FIX THE LOCAL PRICE OF MOST PRODUCTS.

Surely no one upon whom devolves, in any degree, the shaping of public education in this country, should disregard the fact that it is more the market of the world than the local market that determines the price of nearly all products whatsoever, and that every American laborer must therefore face a double competition,—individually, that of his neighbors; with his neighbors, that of the world at large. For both he should be duly prepared, to wit, as well prepared as his competitors. Nothing should be left to chance; nothing to the hope that divine interposition will save him from the penalty of ignorance. He should be taught not to ignore his distant competitor because he cannot see him, but to remember, that in these days of telegraphs, steam carriage, and restless commercial enterprise, the laws of traffic pay little heed to mountain barriers and ocean wastes. The earth has virtually lost her ancient commercial dimensions, and there is nothing for it but to give the workman a broad and thorough industrial education, based on science and art.

So it is well, indeed absolutely essential, for Americans carefully to study what European governments have done and are doing for the better education of labor.†

* In 1872, Prof. T. C. Archer, of the Edinburgh Museum of Science and Art, attended the Polytechnic Exhibition held at Moscow; and, from his report to the English Science and Art Department of the Committee of Council on Education, the following paragraph is taken:—

“Group No. 16 may be represented as a manufactory of ornamental plate in silver and silver gilt. Besides a splendid display in what may be termed the show-room, there are two very roomy and well fitted up workshops, in which the artisans may be seen working in the richly wrought and characteristic Slavonic designs, which are so notable in the plate produced in Moscow by the great firms of gold and silver smiths. The schools of art established about eight years ago, on the model of those at South Kensington, have, under the direction of Mr. Bowtoffski, greatly stimulated and improved the national taste, and have especially led it to accept the pure Slavonic models, of which the imperial treasury in the Kremlin contains such an abundance of the best examples.”

† Charles Francis Adams, Jr., chairman of the Massachusetts Commissioners to the Vienna Exposition, says in his report: “Take, for instance, the great branch of technical and artistic education which has already been referred to. It has of late years undergone a surprising development in Europe, the results of which supply its most interesting and instructive feature to the recent Exposition. It is now exciting the greatest interest among all thoughtful men in America, and promises infinite results in our immediate future. The Massachusetts commission might well have been organized with a single view to dealing thoroughly with this department.”

While many of the political and social maxims a monarchy might desire to inculcate through its schools are not adapted to a commonwealth, yet in the matter of industrial education the thing that is good for the foreigner is good for the American; since both have to work with the same materials and implements, according to the same natural, mathematical, and artistic conditions, and are subject to the same universal laws of trade. Hence the elaborate official Austrian report on drawing and art education, here reprinted in full, becomes an exceedingly valuable document for the consideration of all who take an interest in American public education. The objection is, indeed, sometimes heard, that the educational experience of Europe cannot apply in America because the situation—political, social, and industrial—is so widely different from the European. But it is far from being wholly different. First, for reasons just stated, industrial education needs to be much the same everywhere; and, second, our manufactures, which are rapidly growing, have already reached respectable proportions. If we are to make the most of ourselves, we must become a vastly greater manufacturing people than we are to-day; and to this end we must sustain our manufactures, not by cheapening labor, nor by paying a premium on ignorance, but by properly educating the laborer.

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THE INDUSTRIAL PROBLEM FOR AMERICANS.

And so the great industrial problem to be solved by the American statesman and educator is this: How can we make the most of our natural resources, which, though varied and vast, are but the basis of wealth? How can we manage to consume in home industries the larger part of our raw material, adding to its value by the magic touch of taste and skill? Instead of exporting raw material in the main, how shall we become an exporter in the main of commodities the greater part of whose value has been added by the processes of manufacture? Until such is the case we shall not attain to the highest and most enduring prosperity; we shall not occupy our true place among the nations of the earth. The problem cannot be solved by protection, of which we hear so much, certainly not by protection alone; nor yet by free trade, whose special function is to distribute natural advantages, not acquired ones like skill and taste: it can only be solved by education undertaken for definite industrial purposes, and directed by reason and experience. And this education, in its elements, must aim to develop the skill and taste of the whole people,* not merely of selected classes. Even if it were in the least desirable, which it is not, to give to the early training of each one a specific direction, it would not be accomplished in any rational, satisfactory manner; for no man has sufficient prescience to forecast the future of any child, to tell just how his natural powers will develop, just what will be the great controlling circumstances and requirements of his manhood. All early public education should aim, 1, at the greatest good of the greatest number, and, 2, at the discovery, though not at the special training, of special capacities. To such popular education of skill and taste as indicated two objections will be made: 1, that it will give more educated labor than is required; 2, that it will produce a distaste for manual labor. As to the validity of the first objection we can best judge after we have once fairly made the trial. For the present it is perfectly safe to assume that there is enough stupidity inherent in human nature, which cannot possibly be overcome by any amount of education, to supply all the ignorant labor which may be required in rude employments. As to the validity of the second objection, the truth of the matter is, that such an education will cause the workman who has natural capacity enough to acquire it, to take greater pride and delight in his work.† This thing

* In his report on education, John W. Hoyt, of Wisconsin, U.S. Commissioner to the Paris Exhibition, 1867, says, after quite a full review of the whole European field, "Both (economical and æsthetic reasons) demand, with a voice that should be heard and heeded, the prompt adoption of measures for providing instruction in the elementary principles of drawing and modelling in all our public schools, and in the industrial applications of art in all our schools of applied science."

† Louis J. Hinton, who attended the Vienna Exhibition, 1873, says, in his special report to the State of Massachusetts on "Museums of Art and Industry," "One fact is proven, standing firm as a rock, by the united testimony of all the European savants who claim to speak with authority on this subject,—that is, that, if any improvement is to take place in the art-industry of the country, it must come from the better education of the people in art, and this must commence with popular instruction in freehand drawing. It is also shown that such knowledge as is imbibed at the drawing school, the technical educational class, art gallery, and the art-industry museum, educates men to feel more interest in their work; that new methods of doing old-time work suggest themselves to the man who has been taught in the principles upon which the success of his work depends."

alone is quite sufficient to justify much effort to secure it; so think foreign governments.*

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GOOD FOR THE WHOLE, GOOD FOR THE PARTS.

Whatever promotes the prosperity of a nation as a whole, must, of course, promote the prosperity of its parts. Skill and taste do the former; they must, therefore, promote the prosperity of a city, town, or village. Then how to secure this skill and taste, is the question. To repeat what has already been said, there is but one positively certain way, and that is to educate. Skill and taste are the peculiar products of no land, nor can they ever be had for the mere wishing. In protective tariffs there is too much premium on ignorance for the lasting good of even those they are intended specially to protect; and the free trade which exposes rude labor to the sharp competition of skilled, artistic labor, puts the former at great disadvantages as well in the home as in the foreign market. Against foreign competition nothing but skill and taste can give effectual and permanent protection, while leaving us all the advantage of a natural system of exchange. At home, since trade is unrestricted, there is, of course, nothing left any town or State but to protect itself by properly educating its labor, and thus re-enforcing whatever superior natural advantages it may possess. This it owes to itself as a State or town, and then to each child reared within its limits.

GENERAL CHARACTER OF PUBLIC EDUCATION.

The general character of this education should not be determined by merely local circumstances; for with perpetual migration, and in the absence of caste, there is no assurance that any American child will do what his father did before him, or will die where he first saw the light. Though born in the most secluded farmhouse, he should be treated as the child of the whole country, and so educated that he may have a fair chance with his fellows wherever he may make his home. By this it is not meant that he should be trained to a special knowledge of all kinds, or any kind, of labor, but that he should be made acquainted, through the study of language, mathematics, science, and art, with the general principles which underlie them all, and with those practical applications which, without retarding the acquisition of principles, can be learned at the same time. General culture and a fair start in any pursuit demand so much for all. Again: in determining what should be the general character of the education given American youth to-day, we must regard the present and prospective condition of things, and not educate on the basis of what was required fifty or twenty-five years ago. We must also look abroad recognizing the fact that American life and industry feel the influence of the remotest parts of the civilized globe. It is only by thus shaping the general form of American popular education that it can be made adequate to the requirements of the age.

RECAPITULATION.

Here let us recapitulate the points which have been considered in this discussion.

1. A long age of industrial conflicts has begun. The governments of Europe, realizing that henceforth national supremacy will be determined more and more by industrial supremacy, are arming their workmen of all kinds and grades with the best weapons that art and science can furnish.

2. All that they are doing for industrial education is justified by the fact, that the artisan class are rapidly gaining upon the whole population, and that manufactures are rapidly increasing in comparative importance.

3. It is justified by the fact that the competition which the workman must meet is growing wider and more intense every day.

*The following extract from a circular dated June 7, 1870, and addressed to her Majesty's diplomatic and consular agents in all parts of the world, shows that the British Government realize the importance of having workmen take pride and delight in their work:—

"3. What is the quality of the work executed by workmen? Are they generally competent in their several departments? Do the artisans take a pride in their work, and put their character into it? Would they make a stand against doing bad work as they would against receiving bad wages? Are there any class of artisans whose work can be depended upon as good from the sense of honor they have in executing it? What influence has the skill and trustworthiness of the workmen in any department of industry exercised upon the rate of wages?"

4. It is also justified by the fact that manufactures embodying skill and taste are more advantageous to a country than rude manufactures.

5. It is well that we should study what Europe is doing for industrial education, because in her artisans we find our great rivals; because industrial education, however it may be with political education, needs to be much the same the world over, and so what is good for a European is good for an American.

6. In the matter of numbers, our artisan classes, compared with the rest of our population, are advancing to the front; and our manufactures, already of respectable proportions, are steadily gaining in relative as well as absolute importance. It is only by carrying our manufactures to the highest pitch of excellence that our agriculture can be made the most prosperous.

7. To-day our manufactures are distinguished rather for quantity than quality. Much skill has been expended for the purpose of accelerating production and lowering prices. Compared with this the expenditure of skill and taste for the purpose of increasing quality, and thereby advancing prices, has been but slight.

8. Hence the value added by the process of manufacture is much less than the value of the raw material consumed. Hence we export food and raw materials, and import manufactures embodying skill and taste. All this should be decidedly modified by improving the quality of our manufactures, and by consuming a larger proportion of our raw materials at home.

9. Price can be increased only by increasing the quality of manufactures; and the quality can be increased only by an increased expenditure of skill and taste, especially of taste as displayed in the form of the object or of its decoration.

10. Skill and taste are mainly the product of education. It is only upon workmen who have been suitably educated in science and art, especially in art, that we can securely count to carry our manufactures to any high pitch of excellence. Back of the skilled, artistic workman, needs to be a public taste to create a demand for his products, and to stimulate him to greater efforts.

ART-INDUSTRIAL EDUCATION THE PRIME NECESSITY.

According to the condition of things which has been described, the future growth and prosperity of the United States must come largely from the growth and prosperity of her artisan classes. The growth and prosperity of these classes will depend on the success with which they can meet the competition of the world; and this success will depend largely on the school education they have received, and especially on the art element of that education. Europe is putting into her industries millions of men and women trained in art and science, but especially in art; and she is making vast and systematic efforts to elevate as well the public taste as that of the artisans. We can do no less; we can meet such competition only in kind; our people must be educated in art. Now, the basis upon which all instruction in art must rest is drawing,—the representation of form. Many, taking some one feature of drawing to be all there is of it, greatly misapprehend its true scope. For example, drawing may be thought to consist simply in the representation of objects which already exist; whereas for industrial purposes drawing must be mainly employed for the representation of objects which do not exist, but which are to be made. An account of the different kinds of drawing, with their manifold applications, would be interesting, but it is not necessary to give it here.

METHODS OF EDUCATION IN DRAWING, AND IN ART, MUST BE IN ACCORD WITH THE LAWS OF PEDAGOGY.

As to the general manner, however, of conducting instruction in drawing and art, a few words may not be out of place. It should be thoroughly rational,—should accord with those recognized educational principles which can never be safely violated, whatever the subject taught. If drawing and art have no elements which can be treated in a rational manner, as all other studies have, then they cannot be taught at all. What is acquired simply by imitation, or as a matter of mere vague feeling, is never learned in any true sense,—is never understood. This Austrian report treats instruction in drawing and art as a matter which can be subjected to reason, and treated according to true pedagogical principles. Hence it is believed that, while it will tend to give a juster view of the scope and importance of art-industrial education, it will also afford knowledge that will prove of special service to the teacher. There are points in the report which will be condemned by some who are good authorities on art-education,—points which future experience and investigation may show to be incorrect. But the fact remains, that the report is pervaded by a rational educational spirit, and so must command

respect for the principles which it lays down for the guidance of art instruction. Some of these principles are here enumerated :—

1. All instruction in drawing should have for its basis, geometry.
2. Conventional forms, which are regular, should be drawn before natural forms, which are irregular.
3. Ornament should be based upon a study of nature, especially of plant forms. This does not mean that the drawing of the latter should precede the drawing of the former.
4. When a design for an object is made, the form should be adapted to the use, and the ornament should be subordinate to the object. The decoration should not count for every thing.
5. Much attention should be given to the drawing of historical forms illustrative of different styles. The drawing-copies should have a pronounced character.
6. When natural forms are drawn, they should be first referred to the general geometrical forms upon which they are based. Then the historical treatment of similar forms should be carefully studied.
7. Knowledge should precede execution. Nothing is more deadening to the intellect of the pupil than to copy a drawing which he does not understand. He should not only learn to do a thing, but the reason for doing it.
8. In the order of instruction, the rendering of pure form should take decided precedence of light and shade.
9. Instruction in drawing should not be limited to any one kind of drawing.
10. In order to develop the taste of the learner, the drawing-copies and models should be as beautiful as it is possible to make them. This is a matter of the utmost importance.
11. The pupil should be constantly exercised in making original designs,—original applications of all the principles he acquires.
12. The study of the human figure should not be made the foundation of art-industrial education. It should not form the beginning of art-instruction for any purpose.
13. Those teachers succeed best who recognize instruction in drawing as an integral part of general culture, and treat it according to systematic pedagogical principles and methods.
14. The instruction, in order to reach all, as demanded both by general culture and by industry, should be made universal, and should begin in the primary school. Special applications should be reserved for special schools.

TWO OBJECTIONS.

Without doubt, two objections will be made to the general drift of this discussion. The one will come from those who hold that the public schools should aim at general culture, at mental discipline, giving little heed to the amount of information imparted, and no heed whatever to direct business or industrial results. To form, not to inform, to make men, not workmen, is, in their judgment, the only thing worthy the consideration of a public educator. But there is another, and, it is believed, a more sensible view, which holds that to make a good workman is to make a man; that the acquisition of useful knowledge does not stand in the way of mental discipline; that the public schools should aim 1, to teach the things of direct use to the largest number, and, 2, to teach these things in such a way as to afford the utmost amount of mental discipline. A knowledge of the practical applications of drawing and art is of direct use to vast numbers. To show this has been the main object of the discussion thus far. It might also be easily shown that this knowledge, and the discipline which comes with the effort to acquire it, form an essential element of general culture, an element obtainable from no other study, an element which, if one lacks, he cannot be said to have been symmetrically trained. Indeed, until this is added, our public education must continue, as it is, emphatically lopsided, not only from the industrial, but from the culture point of view. But this is a matter, which, important as it is, need not be considered at the present time.

The second objection will come from those who look upon art as something peculiarly divine. They are shocked when one talks of making art contribute to the daily wages of the artisan, to the volume of trade, to national prosperity, and the sinews of war. They believe that the decided industrial tendency which art education is taking in this country will prove destructive to all the higher manifestations of art; that a people once taught to make beautiful calico prints, shoes, tableware, furniture, will be content to do nothing more. They also believe that instruction in neither industrial nor fine art can be reduced to fixed principles and methods, and so believe that art cannot be taught in schools as other things are

taught. Consequently they take delight in telling how impossible it is to do what the great masters have done, instead of attempting to show how the great masters actually went to work to secure their wonderful results. It will be proper to answer these objectors,—to show that there is no antagonism, but the reverse, between industrial art and fine art, and that each rests upon a mass of definite, teachable facts and principles, many of which they have in common.

* * * * *

HOW CAN THE INSTRUCTION OF THE PEOPLE IN ART BE BEST GIVEN.

Finally, how can instruction in the teachable elements of art be best given? The answer shall be brief,—so brief that it will perhaps appear dogmatic. As the whole people should be reached, the means must be adequate to the end desired. There must be books, drawing-copies, models, casts, and, for some of the advanced work, special school accommodations. The forms given to be drawn, whether flat copies or solid, should be scrupulously exact, should have pronounced character, and, if they are to affect the taste, should be as beautiful as it is possible to make them. They should, of course, be graded according to sound educational principles. Then the forms to be drawn, especially in the earlier stages of each department, should be accompanied by a printed text, on whose preparation the utmost care should be bestowed, to the end that not only the requisite information may be given, but that all inaccurate and slovenly use of language may be avoided as in the preparation of a grammar, rhetoric, or other school-book. A carefully prepared text is thus insisted upon because it is seen that at the foundation of all art there lies a great body of facts and principles, which can be described in language, and must be so described in order that they may be learned. If this verbal description is possible at all,—and no one will deny it,—then it is possible to be made in printed language which will crystallize the statement of facts and principles for universal and perpetual use. Whenever the learner fails to comprehend the text, or special circumstances require that more should be said, then the text must be supplemented by oral explanation from the teacher. A good text and a good teacher are much better than either alone.

CAPABLE TEACHERS ESSENTIAL TO ART EDUCATION.

Those who look upon art as a mere matter of feeling, who do not acknowledge such a thing as art-science, will, of course, see no use in such a text as described, though they would applaud a printed rhapsody on art that was calculated to produce a tumult of indefinable feeling in the bosom of the learner. Teachers are another essential thing, and they must be numerous enough to do the great work required. What should be their qualifications? First, they should possess general teaching ability; second, a knowledge of the teachable elements of art. Hence artists as artists are not required; of course there can be no objection to them, provided they also know how to teach. If they lack the teacher's gift, they will inevitably fail. Whoever, therefore, can learn teachable things, and having learned can impart their knowledge to others, are the ones to give instruction in art. The more, indeed, they know beyond what they are required to teach, the better. Hence, to disseminate an elementary knowledge of art among the whole people, the instruction must be given by the regular teachers in the public schools. To say, as some do, that we can have no good instruction in art until we have great artists for teachers, is the same as to say we can have no good instruction in arithmetic, in grammar, and reading, until we have the pupils in our public schools taught by great mathematicians, great poets, great orators. There are probably thousands of primary teachers in this country who can teach the elements of drawing better than Raphael himself, just as Sherman probably had hundreds of sergeants in his army who could drill a company better than himself. Give the regular teachers in the public schools the means to work with, make the study of the elements of art as of mathematics compulsory, and good results will surely be secured.

HOW MANY NEW ART SCHOOLS ARE NEEDED TO EQUAL, FOR OUR MANUFACTURING STATES, THE NUMBER ALREADY IN ENGLAND?

But what of more advanced instruction in both industrial and fine art? This must be given in well-appointed art schools, otherwise it can be made neither so general nor so good as it should be. Were Massachusetts, New York, Pennsylvania, and Illinois as well supplied with these schools as England,—that is, for each 210,000 inhabitants one school with 190 students,—Massachusetts would have 7 of them, New York 22, Pennsylvania 17, Illinois 12,—which would give the four States

a total of 57 schools, with 10,880 students. These schools, supplied with all necessary means for their work, should be in the charge of persons who possess a thorough knowledge of the teachable features of the subjects of instruction, and who, in addition to this knowledge, possess the ability to impart, in the most rational way, what they know. But it will be vehemently urged by some, that this teaching of the schools cannot be effectual, that old practices should be followed, that art-students must get their training, if it is to be of any value, in the studios of great artists, as formerly was the fact. To this there are several objections, but one, which is all-sufficient, is enough to name: the large number who ought to be taught, and in various things, cannot be reached by such a mode of procedure. This studio instruction, excellent in many things, was essentially an apprenticeship under the old masters. Now the times have so changed that apprenticeship has, in obedience to natural causes, nearly or quite disappeared from all industries. In a similar manner, to meet the rapidly increasing and varied demands for art instruction, the school must, in the main, supplant the private studio, doing the work required better than the private studio can possibly do it. But, again, it will be vehemently urged that art instruction which is limited to the things that can be taught with pedagogical precision will never produce a genuine artist; that there must be a certain something which a student can obtain only by working under a great master. It is indeed true that a knowledge of the precise and teachable features of art is far from enough for the making of a genuine artist; but it is also true that there can be no genuine artist who has not this knowledge, which is all that even the greatest master can impart.

THE GREAT ARTIST MUST NEEDS BE INDIVIDUAL.

The power which a great artist displays in handling the teachable elements of art, and in producing his wonderful results, he cannot impart to anyone: that is something which must "exist in the man, in the subject, and in the occasion," as Webster said of true eloquence. The great artist is distinguished, not for disregard of the precise and teachable principles of art, but for his power, for his genius, in using them; and that is something he cannot confer upon another by teaching, not even if he were no less a teacher than artist. A great master may, indeed, impress upon the work of his students, especially if they possess inferior powers, some of his own characteristics, making of his students imitators, and thus founding a "school." This, however, is not true teaching, since its result is imitative, and not rational. An art student should, upon leaving his instructor, be so well grounded in the rationale of his art, that he can pursue an independent course. With this power the students who studied under Agassiz left their instructor; hence they are turning out Darwinians, though Agassiz himself fought Darwinism to the last. It is not mere reproduction of the past that we want either in science or art, but a rational use of what we have received from the past. As we increase our knowledge of the poetic art and our taste for poetry by reading Homer, Milton, Shakspeare, and do not care to have them further than this for teachers; so the main advantage to be derived from great artists must come through a study of their works, which can be collected in art schools, galleries, and museums.

In this way they can teach, silently, most invaluable lessons. Yet it is not an attempted reproduction of these we want. Indeed, we want the art of no man, no country, no age; even if we did, we could not obtain it in its essence. What specially characterizes the art of any man, country, age, being a natural growth and not an artificial creation, is not, in its essence, transferable; and the attempt to transfer always results in pinchbeck imitation. This fact they will discover who talk so loudly about French art, and so vehemently urge its cultivation in this country. Whatever there is generic and rational about French art belongs to all art and to human nature; that we want: whatever specially characterizes French art will always remain French and untransferable. We do not want that: we want an art of our own, and we shall surely have it one day, as fine as the world has yet seen, original, springing in its characteristic essence from the soil. It will be rational, not a caprice, not a trick; it will be founded on those general principles which are teachable, which underlie all art, which can be learned by the people, and when learned will enable them to comprehend and enjoy the highest achievements in art.

INTRODUCTION.

[By PROFESSOR LAGL.]

The universal importance of instruction in drawing was not fully recognized until the products of the arts and industries of the various nations met each other at the World's Fairs. It then became evident that most raw materials receive

their value in social interchange through form only ; and that therefore the education of form, according to æsthetic principles, is the first condition for the successful development of industry, as well as for the elevation of taste in general. The first powerful impetus toward a reform in art-instruction was given at the London Exhibition of 1851, where the products of industry from all parts of the world were brought together for the first time in an international tournament ; and England herself then proceeded, through the instrumentality of drawing-schools, to regulate taste, which had long been subject to caprice, in accordance with scientific maxims ; to introduce uniformity into the treatment of the matter of form, and to give to its development a basis resting upon æsthetic principles. The industry of France, which until then had proceeded without principle in the matter of style, allowing itself to be swayed by external influences, and dazzling rather by the brilliancy of its manual dexterity than by virtue of its positive artistic merits, presently found that it must also enter into this reform if it did not wish to see its productions seriously endangered in the markets of the world. For the example set by England was followed by Austria, by Germany, in part at least, quite lately also by Russia ; and everywhere these efforts were accompanied by the best results. And, simultaneously with the growth of art-instruction during the last decades, art-science* likewise expanded its wings more and more powerfully, and contributed not a little towards the elucidation of the æsthetic conceptions of our time.

The world followed this revolution in industry with increasing interest, at the subsequent exhibitions which have been held in the course of the past twenty years at Paris and at London ; but on these occasions criticism was compelled to judge by *results* only, as the *causes* of the revolution, which are to be found in instruction, could not be investigated, for want of the necessary material. This demand was, however, fully satisfied by the World's Fair of 1873 ; as nearly all the states represented in the domain of industry were also represented in the department of art-education, and each state had endeavored to illustrate the efforts it is making in this direction.

In working up the vast material displayed by the various countries in the shape of specimens by the pupils, aids for teaching, &c., the reporter found himself compelled to notice also the achievements of industry as forming the actual starting-point of the efforts under review ; and he believes himself to be all the more justified in this transgression of the limits of his department, as it presented the only way by which a correct judgment on the subject of instruction could be arrived at.

By far the greater part of the objects exhibited in the section allotted to the reporter had reference to art-industrial instruction. The rest pertained to the general schools in which art-instruction ought to be made an integral part of general education, and drawing should be used to awaken the æsthetic feeling more universally than heretofore. As this problem is still everywhere waiting for its positive solution, and as our own time, more than any other, is strenuously at work upon its elucidation, the reporter has endeavored, as far as possible, to show the present position of this branch of instruction in the various countries. Next to the laws, enactments, &c., concerning the subject, he has therefore directed his attention principally to the forms and the methods employed in its study. A short characterization of the copies, models, &c., in use may serve to complete the picture.

The reporter believes it unnecessary to call attention to the fact, that his department, looked upon from the point of view just designated, is one of vast extent ; and he must ask indulgence, if here and there he has not done justice to his task. As it was frequently impossible to obtain other than insufficient information concerning the deficiencies of the Exhibition, he must also be excused if some parts of the report should appear to be more broadly treated than others.

**Art-Science*, the German "Kunstwissenschaft," is a word which has hardly been naturalized as yet in the English language. It embraces all that may be known respecting art,—its history and its philosophy, as well as its technical detail. Art-science, which is a creation of modern times, seeks to impart to the study of art as much of the method of the exact sciences as the nature of the case will permit. It therefore proceeds empirically ; and its activity, in searching through archives to obtain documentary evidence concerning the lives and the works of the artists of the past, has been marvellous, especially of late years. It also lays great stress upon the comparative study of art, and has therefore been of great service in the elucidation of the question of style, not only in its application to nations and periods, but also to individual artists. Its ultimate aim must of course be, to deduce those general laws, which will enable us to comprehend art in its essence and in its historical development.—*Transl.*

The remark already made in other reports must be repeated here; viz., that the enormous dispersion of the materials rendered the task infinitely more difficult. The character of Groups XII. and XXV.* frequently caused a dismemberment of objects of Group XXVI.,† which ought to have been together, thus frustrating the *coup-d'œil*; and, in matters of education, there were added to this difficulty the separate exhibitions in the schoolhouses, where fragments of the various aids for teaching had likewise to be looked for. Nevertheless, the reporter believes that he has recorded many things which may in future be of value to the highly important subject of education.

It is self-evident that the great industrial powers, such as France, Germany, Austria, England, and Italy, had to receive a more detailed treatment than the other countries, in which the efforts in question are of less importance. If, as far as Germany, and especially France, are concerned, the past has been drawn upon to a greater extent than the programme of the "Official Report" seemed to demand, this may be justified by the fact, that there was a defect in this respect in the discussion of our subject in the reports on former World's Fairs; and that it appears important, in view of the current of the present day, to throw some light upon the sources of the traditional elements of art-industry.

REPORT ON ART EDUCATION.

[By Professor LANGL.]

AUSTRIA.

Whoever compared the results of instruction in drawing in the Austrian People's and Middle Schools, with those attained in the schools of a similar category in other countries, was forced to admit, that, on the whole, this subject is cultivated much more carefully and much more successfully in Austria than elsewhere. Even in the relatively short time which has elapsed since its introduction into the scheme of education, the methods of teaching have very generally shaped themselves in accordance with a uniform principle deduced from experience; and it was noticeable, that those schools took the lead, and shone as models before all others, which have the advantage of superior teachers, who perceive drawing to be an integral part of general education.

INTRODUCTION OF PUBLIC ART INSTRUCTION IN AUSTRIA.

Drawing in the Austrian schools, like every thing that is new, had to pass through in phases of childhood, had to become naturalized among the existing subjects of study, and had to overcome prejudices, and to struggle against a number of other difficulties, before it succeeded in gaining a solid basis upon which to erect a superstructure of well-defined proportions. Art-science, industry, and instruction in drawing, have almost kept pace with each other in their development in Austria (where Vienna is looked upon as a common centre), since about the year 1850. Industry demanded forms, art-science pointed them out, and drawing stepped in as a bridge, as a connecting link between the two. The reform for which taste was prepared by these agents could only be accomplished by the aid of the drawing-classes; and as the industries demanded this reform on the one side, while art-science endeavored to carry it through on the other, drawing necessarily became the central point of the theoretical, as well as of the practical elements of art-education. With the international combats which took place at short intervals in the arenas of the World's Fairs, between the products of art, of industry, and of education, the factors from whose co-operation true progress can alone be expected, approached nearer and nearer to each other, and the current increased in rapidity. What Austria mostly stood in need of was a common centre for the reformatory movement. England secured such a centre in its South Kensington Museum, with the Art-School attached to it; the principal cities of France and of Germany are struggling to attain the same end; Russia reached it when she established her Museums and Art-Schools at Moscow and at St. Petersburg; and Austria has also seen her wishes realized by the establishment of the "Museum of Art and Industry" at Vienna.

* Group XII. embraced "Graphic Arts and Industrial Drawing;" Group XXV., "Works of the Fine Arts of the Present Time."

† Group XXVI.—"Education, Teaching, and Instruction."—*Transl.*

EDUCATION IN DRAWING HIGHLY ESTEEMED IN AUSTRIA.

With the improvement of educational matters in general, which has been effected in Austria within the last ten years, drawing in the schools for general education has gradually been brought nearer to its real destination ; and in this respect Austria had the advantage of other states, as the subject had always been compulsory in her Real-Schools.* For, although these schools had formerly aimed principally at technical education, drawing had obtained a sound basis in them, and the methods of teaching had had time to define themselves in the course of a number of years. On the part of art-science, the higher importance of instruction in drawing was also urged with constantly increasing emphasis. It was contended, that it must not only serve technical and industrial interests, but that it has a greater mission, the education, namely, of our younger generation to the understanding of the language of form in general ; the unlocking of their eyes to the beautiful in art and in nature ; and, as a consequence, the cultivation of the intellect, and the purification of taste. The establishment of the Real-Gymnasias,† in which this humanistic aspect of drawing was destined to receive a more prominent recognition, thrust the question further into the foreground ; and the Real-Schools likewise demanded its solution, when their re-organization in favor of the humanistic branches was effected in 1870.

DRAWING MUST BE TAUGHT PEDAGOGICALLY.

According to a proverb, all roads lead to Rome, and whoever is clearly conscious of his aim will reach it sooner or later. This winged word is most frequently made use of in art, in which, indeed, the individual element is generally more prominent than elsewhere, although one common aim is striven for by all, i. e., *truth*. It is different, however, with systematic art-instruction in schools ; certain well-defined tendencies are to be realized here, and fixed standards are therefore an absolute pedagogical necessity. Not artists, in the proper sense of the word, are to be educated, but trained thinkers, who shall have the faculty of conceiving not only in time, but also in space ; and who, by practicing art, are to be fitted to understand art. In shaping the laws upon this subject, experience has always made its influence felt in Austria ; and, in reviewing these laws from about the year 1850 to the present time, we can see the plans of instruction becoming gradually more definite, and we can trace the efforts that were made to introduce unity into the methods of teaching. The last enactment on this subject is dated Sept. 1, 1873, and contains the detailed plan of instruction for freehand drawing in the People's and Middle Schools in accordance with the tendencies above specified.‡ As the main stress in this enactment is laid upon drawing from plastic models, it must now be the concern of the government to provide the schools with the apparatus necessary for this mode of instruction,—a point which was also emphasized by the “Art-Scientific Congress.”§ The experience which has lately been gained at the World's Fair in regard to art-instruction will no doubt be conducive to the propagation of correct principles.

HOW TO TEACH ELEMENTARY DRAWING.

And the reporter must here beg to be allowed to define, in rapid outlines, the point of view to which he has attained by his own pedagogical experience, and by

* *Real-Schools* are so called because they are intended to teach the “Realities,” i. e., practical science and modern languages, which enter into the real uses of practical life. The “Gymnasias,” on the contrary, are principally devoted to classical philology, and are simply preparatory schools for the universities.—*Transl.*

† *Real-Gymnasias* are a combination of the Real-School and of the Gymnasium. The lower classes are common to all the pupils ; but in the upper classes a bifurcation takes place, one branch following up the aims of the “Real-School,” the other those of the “Gymnasium.”—*Transl.*

‡ Compare the report of the Ministry of Education on the collective exhibiton of Austrian education, p. 409, *et seq.*

§ The *Art-Scientific Congress* met at Vienna in the early part of September, 1873, and was attended by about seventy delegates from Germany, Austria, Hungary, Italy, Belgium, Switzerland, Spain, and England. After an address of welcome by the Austrian Minister of Education, v. Stremayr, the meeting organized by the election of Prof. R. v. Eitelberger as president ; Messrs. J. A. Crowe (joint-author with G. B. Cavalcaselle of the “History of Painting in Italy”) and Schön, as vice-presidents ; and Prof. Bruno Meyer and A. Ilg as secretaries. The meeting was the first of its kind ever held ; a second meeting will occur at Berlin, in September, 1875.—*Transl.*

the insight into the results of the various educational institutions represented at the Exhibition.

The world, as far as it is concerned in drawing, is probably unanimous in the conviction, that instruction in its first stages must begin with geometrical forms, and that ornament must be practiced to a certain degree, before figure-drawing can be taken up. Differences of opinion have reference to the method only; i. e.: How shall the several parts be taught? what shall be their proportion? and what models shall be employed? The ornament, as long as it remains ornament in the truest sense of the word, and does not go astray among the variable forms of nature, as it did during the Baroque epoch, always constructs itself according to a certain rhythmical measure, which gives law to the form. The characteristics of the various styles lie in the nature of this rhythmical development, in the peculiarity of the growth of the ornament, as it were; and it is therefore an inevitable necessity in instruction, if the pupil is to receive an insight into the organism of this world of form, that the teacher himself should develop the forms, i. e., that he should draw them on the blackboard before the class.

IN ART AS IN LITERATURE THE LEARNER MUST SLOWLY APPROACH THE MASTERS.

But by no means must the welfare of æsthetic education be sought in the mere knowledge of all the existing styles of ornament. General culture will demand this knowledge; but the development and perfection of æsthetic culture can only be induced by the study of the best thus far produced by the nations of the globe; and in the choice of examples for educational purposes the Grecian, Roman, and Renaissance monuments will claim attention above all others. Besides these, however, nature, as the source of all ornamental forms, must likewise be considered.

But as ornament, although not a lifeless, is still a soulless formation, and its study in schools for general education can only be looked upon as a technical preparation for the comprehension of art, it follows, that the pupil, as soon as he is able correctly to reproduce these "Forms in Rhythm," will have to take up the truly educational study of the more intellectual human form. Here, through forms, he will make the acquaintance of souls, will learn to distinguish characters, and at the same time will become familiar with art in its masterworks, while acquiring technical execution by the study of well-chosen models. All the French drawing-copies lately published start from this point of view, and our time possesses an invaluable aid in this respect, in the photographic facsimilies. The road in figure-drawing must lead from the characteristic, the glaring, the striking, to the classical repose of the antique. The forms of a Phidias would be as little in place in the first stages of figure-drawing, as the works of Sophocles or Æschylus in an elementary reader. And in those schools where, in spite of these truths, instruction began with the antique, figure-drawing remained only ornamental drawing of another kind, while a more delicate comprehension of the nature of man, a penetration into the soul, was made impossible. The way for the antique must be prepared by the masterpieces of the fifteenth and sixteenth centuries. Leonardo's Apostles, Raphael's heads from the Camera della Segnatura, &c., are models, which in their forms are more akin to the imagination of youth, because they are creations pulsating with life. It belongs to a higher stage of development to comprehend the beauty of the Zeus Otricoli. Although anatomists and artists, in times gone by, have repeatedly endeavored to construct the human figure according to a definite canon, and to create an ideal of proportions which might serve as a basis for æsthetic conceptions, art has never consented to accept these theories, nor must they be accepted for instruction. If proportions are to be spoken of in figure-drawing, they must be confined solely to the laws of growth of the bones, to the definite anatomical principles, in which modern investigations in this science have given such beautiful results for art; but all shallow general receipts, which are at variance with the laws of nature, must be kept away. Indeed, nature still infolds many secrets in her variations, which cause the intellect to reflect in youth, at the time when impressions are most vivid, and receptivity is at its height.

FIGURE DRAWING DIFFERENTIATES THE INDIVIDUAL.

The real purpose of figure-drawing in all its stages will therefore be, to learn how to perceive the *intellectually individual* in the forms of nature. To no teacher in any other branch is it given in the same measure as to the drawing-teacher to occupy himself with each one of his pupils individually. The weaker pupil of slower progress can be brought up to the aim quite as correctly, pedagogically, as the one of more talent; since that which is to be taught, as soon as the hand of the pupil has attained to freedom by elementary ornamental drawing, lies in the finished exam-

ples, and the exposition by the teacher accompanies the correction. Here he can be guided by the individuality of the pupil, and can at the same time pay due attention to æsthetic and art-scientific interests.

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It will be seen that the demand for Industrial Drawing-Schools, as has before been mentioned, is duly attended to in Austria, and their influence upon the various branches of industry will undoubtedly soon make itself felt in a gratifying manner. The success already attained by Austrian art-industry at the World's Fair can only serve as a stimulus to further exertions.

THE AUSTRIAN MODEL SCHOOL OF INDUSTRIAL ART.

The reporter finally begs to be permitted to touch with a few words upon the activity and the success of the *Austrian Museum of Art and Industry*, since this institution may be said to be the model of all other industrial schools, and may be looked upon as the centre of art-industrial instruction in Austria. The specimens by its pupils were not exhibited within the enclosure of the World's Fair, but in the building of the Museum itself. The rich collections of artistic and art-industrial objects at the disposal of the school, the skilful teachers employed in it, together with the abundant support (in scholarships) extended to the students, necessarily caused a rapid development of the institution. The fact that Industrial and Art Museums can only exercise their full influence on the art-industries by means of schools connected with them, has everywhere been recognized of late; and the organization of our institution, together with that of the South Kensington Museum, can probably be looked upon as models.

DEPARTMENTS OF INSTRUCTION.

It is the business of the school to train skilled agents for art-industry. Consequently those branches of art which have the closest connection with industry are looked upon as the principal subjects of instruction, and have influenced the organization of the school. These branches are: 1, architecture, in its application to the ornamentation of buildings; 2, sculpture; 3, ornamental drawing; and, 4, figure drawing and painting, in their relations to art-industry.

For such of the aspirants to the special schools, whose education is insufficient, there is a preparatory course. A series of technical and scientific auxiliary branches provide the pupils with the varied training which is necessary for the successful pursuit of art-industry. Besides the regular pupils, "hospitants" are likewise admitted for the completion of their artistic education.

The specimens exhibited gave a clear picture of the activity of the several schools, and of the tendencies in the modern development of taste. This point will be treated more fully in another part of the report, and we will only mention here, that the manner in which the art-school proceeds is exemplary.

SAMPLES SHOWN OF SCHOOL WORK.

The preparatory course was represented by drawings from models of figures and ornaments, and by drawings illustrating the subjects of style, of projection, and of shadows, as well as perspective and anatomical drawings. The special school for figure-drawing exhibited excellent studies from the antique and from the living model, also studies of drapery (in various manners). The school for sculptors presented studies from the antique and from the living model, together with original sketches. Charming designs by the architectural school were exhibited, in connection with drawings from existing art-industrial objects. This section was also brilliant in its practical achievements, especially in furniture, executed by the pupils from their own designs. The school for ornamental, animal, and flower painting likewise exhibited charming compositions. Painting upon wood and porcelain, and painting in enamel, were represented by very successful specimens. The solutions of definite problems (the written problems also being given) for *sgraffito** decorations, &c., by various pupils, were highly interesting.

* *Sgraffito* decorations being almost unknown in the United States, a few words of explanation may appear excusable. *Sgraffito* derives its name from *sgraffiare*, to scratch or scrape. A layer of mortar which has been mixed with some coloring-matter, to give it a dark tint, is covered with milk of lime. While this upper layer is still fresh, a drawing is executed upon it by means of steel instruments, so that the figures show either in dark lines upon white ground, or *vice versa*. During the

The development of the art-school in the department of practical work is, unfortunately, still too limited, as the localities at its disposal are too small; and this part of the institution, so important in its influence upon art-industry, will only be able to make itself felt to its full extent, when the new building will be ready for occupancy. The study of the various technical processes will then receive due attention, and studios will be provided for enamelling, painting upon glass and porcelain, wood-carving, &c.

The second division of the Exhibition contained the artistic publications of the museum, consisting of plaster-casts, galvanoplastic reproductions, and photographs, and the art scientific works issued since its establishment.*

Renaissance this species of decoration was frequently employed upon the walls of houses, especially in Upper Italy; and of late years it has again been taken up in Germany, &c., for outside mural decorations. As a specimen the Northern wall of the Polytechnicum at Zürich may be cited, which has been decorated by sgraffitos from drawings by Gottfried Semper. Further information, historical as well as technical, can be found in Lange and Bühlmann, "*Die Anwendung des Sgraffito für Façaden-Dekoration*," München, 1867.

* *Art-Industrial Museums*.—The South Kensington Museum which originated in a small way as far back as 1852, having been the first public institution of its kind, has almost eclipsed all other efforts in the same direction; and it may therefore be of interest to glance at the kindred institutions, especially of Germany, which are rapidly springing up everywhere. The conviction is gaining ground more and more, that these museums are an absolute necessity, if German industry is to be able to compete with the industry of England and of France. That it is still in the rear, is freely acknowledged by its best friends; and the rapid advances made by Austrian industry, since the establishment of the Museum of Art and Industry at Vienna, have added a new stimulus to those which were in operation before. The importance of these institutions was also fully recognized by the projectors of the Vienna World's Fair of 1873. A special group (XXII.) was therefore organized at this exhibition to show "*the various methods by which the different modern museums endeavor to carry out the improvement of the general taste of the people, and the manner in which they promote the art-industry and public instruction of their countries*."

The Museum of Art and Industry at Vienna was established in 1864, and occupied a provisional building, until its present building was completed in 1871, on the 4th of November of which year, the emperor of Austria performed the ceremony of laying the last stone. The Museum is well endowed by the state, and has received a considerable number of donations in money, as well as in valuable articles, from the emperor and from private parties; a society has also been formed "for the advancement of the Art-Industrial School of the Museum," whose principal aim it is to provide scholarships for poor but talented scholars, irrespective of sex, nationality, or religion. The activity of the Museum, under the management of its enthusiastic director, Prof. R. v. Eitelberger, is very great. Travelling exhibitions are arranged all over Austria; and the regular lectures of the school are supplemented by popular lectures given every Thursday evening during the winter, admission free. The Museum is open to the public, without charge, on Thursdays, Fridays, Saturdays, and Sundays; on Tuesdays and Wednesdays, an admission fee of thirty kreuzers (about twenty cents) is charged. Artists and workingmen, however, as well as others who desire to use the collections or the library for practical purposes, are provided with cards, which pass them free even on Tuesdays and Wednesdays. Books may be taken from the library, by giving a receipt for them. The list of the publications of the Museum is quite extensive, embracing books, photographs, casts, and a monthly journal (now in its tenth year) devoted to the interests of art and art-industry (subscription four florins, or about \$1.60, a year). The school connected with the Museum has been in very successful operation since 1867.

The first steps towards the establishment of the *German Industrial Museum at Berlin* were taken by a private association, formed for the purpose, in 1866. In the year following, the society was chartered, and received fifteen thousand thalers from the state to enable it to purchase art-industrial objects at the Paris Exposition. The schools of the Museum were opened on the 12th of January, 1868; and on the 7th of April, of the same year, the collections were thrown open to the public in a provisional building provided by the state. In 1869 a portion of the celebrated Minutoli collection was bought for the Museum by the state, at an expense of fifty thousand thalers (about \$37,500); and in 1870 the city of Berlin voted a sum of one hundred thousand thalers, to be applied to the purposes of the Museum, and to be known as the "*Frederic William Fund*," in honor of the late king of Prussia. Various other collections, donations, &c., were added from time to time. The

GERMANY.

It will be conceded on all sides, and without question, that Germany occupied a prominent place at the present Exhibition, in the contest with other states in art and in industry. The mass as well as the variety of the productions exhibited made it evident that the nation has at its command a wealth of talent capable of reaching the highest aims, and that it possesses all the means which are necessary to enable it to add the triumph in the arena of labor to its other triumphs. But, in spite of all exertions, this triumph has not yet been achieved, and the "battle of forms" has again resulted unfavorably to the Germans. This is a fact which can only be accounted for by the deficiencies of art-education, and of the cultivation of art in general.

Museum is now managed conjointly by the members of the society, the state, and the city of Berlin. It receives at present an annual contribution of eighteen thousand thalers from the state; and the latter has also agreed to provide a special building for the Museum and its schools, the cost of which is estimated at eight hundred thousand thalers (\$600,000). The collections are open to the public daily, except Mondays, free of charge. The schools are in a very flourishing condition, the number of pupils amounting to 479 in 1874, of which about five per cent were taught free of charge. At the exhibition of the works of the pupils in 1874, thirty prizes were distributed. The Museum has a branch society in Magdeburg, and contemplates the arrangement of travelling exhibitions. Its publications, according to the catalogues of 1873, embrace 261 photographs and 251 casts.

In the same year in which the Berlin Museum was established (1866), a "*Collection of Examples for the Art Industries*" was commenced at Leipsic, thanks to the exertions of the late lamented Dr. A. von Zahn; and in the year 1868 the collection was opened to the public. This collection has now been united with the *Art-Industrial Museum of Leipsic*, which was formally opened Oct. 25, 1874. The Museum is at present housed in rooms rented for the purpose; but the city will probably provide a special building for its purposes, and aid has also been promised by the government of Saxony. For the present there are no schools connected with this Museum; but as the Art Academy at Leipsic, under the direction of Prof. Nieper, has of late years paid considerable attention to art-industrial instruction, the two institutions will supplement each other. All the necessary funds have so far been provided by wealthy manufacturers, and friends of art.

The *Bavarian Industrial Museum at Nuremberg*, which is closely connected with the celebrated art-industrial school at the same place, publishes an illustrated weekly journal, "*Art and Industry*" (subscription price, 5 thalers per annum), arranges courses of evening lectures, &c.

The *Museum at Weimar*, opened 1869 under the direction of Dr. A. von Zahn (whose name was before mentioned in connection with the "*Collection of Art-Industrial Examples*" at Leipsic), lays special weight upon the art-industrial feature, although the fine arts are likewise embraced in its plan.

In the year 1869 a society was formed at *Dresden*, whose aim it is to establish a collection of art-industrial objects, and to give support to the art-industrial schools now existing.

The *Art-Industrial Museum at Hamburg* will be found alluded to under the head of "*Hamburg*."

The *Germanic National Museum at Nuremberg*, the *Bavarian National Museum at Munich*, the *Grand Ducal State Industrial Hall at Karlsruhe*, the *Grand Ducal Museum at Darmstadt*, the *Roman-Germanic Central Museum at Mayence*, the *Wallraff-Richartz Museum at Cologne* (with a drawing-school), the *Museums at Gofha* and at *Stuttgart*, are all, either wholly or in part, devoted to the interests of art-industry, and seek to advance them in various ways, by publications, lectures, &c.

In France similar institutions are to be found in Paris, Limoges, Lyons, Havre, Amiens, Toulouse, and probably in other places.

Regarding the Russian Museums, see under "*Russia*."

As one of the latest creations of this kind, the "*Hungarian Industrial Museum at Pesth*" may be mentioned, which was opened April 19, 1874.

It will be noticed that the above list does not embrace any of the museums devoted only to fine-art collections proper. The Royal Gallery at Dresden, the National Gallery at Berlin, the Pinakotheka and the Glyptotheka at Munich, the several galleries at Vienna, the City Museum at Leipsic, the gallery of the Strädel-Institute at Frankfort on the Main, the galleries at Brunswick, Cassel, and other places, are institutions which are entirely distinct from the Industrial Museums.—*Transl.*

A REVIEW OF GERMAN ART IN THE NINETEENTH CENTURY.

After German art, at the commencement of this century, had begun to develop itself in men of great talent, and to bring forth grand monumental works, more especially under the patronage of the Bavarian princes, art-industry still continued, for a long time, to play a subordinate part; since, on the one hand, the royal road of art did not touch the domain of art-workmanship, while, on the other, French taste was everywhere so deeply rooted, that it seemed impossible to oppose it with a view to a reform. German industry in general appears to possess but little national character, from the time of the degeneration of taste in the seventeenth century, down to our own day. And yet the opposition against the rule of French taste emanated from the elements of the older national art, which, although crippled and neglected, have preserved their individuality even up to the present time. Germany had brilliant epochs in art and in industry, before the time of the Baroque style. German Renaissance, in its rich development during the sixteenth century, in which the traditional mediæval elements united with those of the antique, forms the true basis of our national art. In painting, the mediæval forms were completely absorbed by the antique; in the present age, a refined realism is developing itself side by side with idealism. Sculpture still bears the marks of the epoch in question more distinctly, but it is likewise about to pass on to realism, from the antique. Architecture, which at the same time had admitted antique decoration into its Gothic forms, again righted itself when the purification of styles took place, consequent upon the complete re-awakening of Greek art. Art-industry, however, as before remarked, followed the current of development but hesitatingly. Upon its fallow field there was consummated a dissolution rather than a blending of these elements, which, indeed, are dualistic in themselves. Not that all industrial skill has been lost by the Germans, but the inventive genius is wanting, to develop the elements already at hand.

The visitor at the German Educational Exhibition could see, by looking over the numerous portfolios containing drawings from the various Art-Schools, that, besides the Gothic and the antique styles, the Renaissance was principally represented. But, wherever the attempt had been made to unite these different elements in original productions, the styles rather hindered each other, so to speak, instead of blending together organically. The study of nature, and especially of plant-forms, is still wanting in the schools; and both of these are indispensably necessary if the ornament in German industry is to be purified. As long as the traditional forms are only copied, there can be no thought of the development of new elements. The study of nature must also supply the understanding of the purpose of the ornament, i. e., its relation to the object and to the material employed, or the art of learning how to translate prosaic forms into forms rhythmically constructed. The German Art-Industrial Schools are often closely connected with industry, and their influence is perhaps quite as potent as in France and elsewhere; which becomes apparent from the fact, that the same defects and the same excellences are observable on both sides.

THE NEED FOR GENERAL ÆSTHETIC TRAINING.

The experience gained by the Germans at former World's Fairs, in the department of art-industry, has indeed brought about a slow revolution in taste; but a decided reform has not yet taken place. It must of course be admitted, that the requisite political unity, and with it the necessary guiding and animating impulse from above, was wanting until of late; but there was also wanting what Gottfried Semper, at the time of the London Exhibition, indicated in his "Propositions for the Incitement of a National Art-Feeling," viz., "a suitable general education of the people in matters of taste." It is only quite recently that things are beginning to stir on all sides; and, if the efforts now making are vigorously continued in the future, art-instruction may before long occupy its proper place in the schools. Drawing, which, outside of the Art-Schools, used to be practiced only in the Industrial Improvement Schools, and in the Sunday and evening classes, has now been partially introduced into the institutions for general education, where it is charged with the mission of awakening the feeling for the beautiful in form. Much, indeed, is still to be wished for, and much still remains intrusted to the future; but the fullest measure of recognition is even now due to the energetic efforts of the German drawing-teachers, who have taken hold of their subject with the most active zeal, and have already achieved excellent results, especially in regard to methods, and the provision of suitable examples for elementary instruction. It was only to be regretted, that so little of the work of the pupils of the People's and Middle Schools was exhibited; the greater bulk related to the special schools and schools for adults, giving a very clear insight into the efforts now being made in this field, especially in the South of Germany.

In the following review of the exhibitions of the several German states, the reporter has therefore treated more especially of industrial education, and, as far as the People's and Middle Schools are concerned, has frequently confined himself to a discussion of the laws pertaining to this subject, and to the drawing-copies and other aids for teaching which were to be seen at the World's Fair. The material offered for inspection was quite abundant; and most of the states had taken care to supplement by written explanations whatever had been omitted in the Exhibition for want of room or for other reasons.

BAVARIA.

The Educational Exhibition of Bavaria covered all categories of educational institutions, from the Primary Schools for the smallest children to the Technical and Industrial High Schools. Numerous statistical tables, programmes, &c., supplied very full information regarding the organization of educational matters, and gave a clear survey of each separate branch of education.

The Art-Industrial Schools, with their nuclei at Munich and Nuremberg, are the traditional centres of gravity for drawing-instruction in Bavaria. The subject is made to serve the industries almost exclusively; and, even down to the latest times, no other than practical results have been aimed at. It need not surprise us, therefore, that the understanding of art among the people of Bavaria still leaves much to be desired, in spite of the flourishing condition of art at the academies, of the numerous collections, museums, monuments, &c., created by art-loving kings. The principal purpose of instruction in drawing will always be to educate the eye to read and to understand forms; but the subject has been totally neglected heretofore in the Bavarian schools. Since German art was recalled to life by Cornelius, so many roads have been opened for this branch of instruction, that it must indeed appear strange to see so little attention paid to it, as a part of the education of the people, in the very country in which this resurrection took place. "Although instruction in drawing," says J. Bahm in his "Statistical Handbook of the Bavarian People's Schools" (1872), "was made a compulsory study in the People's Schools by the plan of instruction of 1811, it is nevertheless neglected in most of the schools even to-day; it is partly taught only in the larger cities, and it is more than surprising that in Nuremberg, the principal industrial city of Bavaria, this branch of instruction is not cultivated at all."

Very naturally the specimens from the Bavarian People's Schools to be seen at the Exhibition were unimportant, and gave no evidence of any definite method. An exception was made only by the Munich schools, in which, according to the new plan of instruction of 1872, drawing upon slates is begun in the first class, proceeding in the following classes from the drawing of simple geometrical forms, upon paper, to outline ornaments. Better methods are also followed in the schools of Kirchdorf and Aichbach, in which latter place stigmographic copies are used with success.

The reason for the slight attention paid to drawing in the Bavarian People's Schools is no doubt frequently owing to the desultory, unsystematic preparation of the teachers at the seminaries. The specimens exhibited showed this very strikingly. The law of 1866 for the education of teachers, prescribes the following order for the three courses: "Course I. Practice of the eye and the hand in drawing from sufficiently large bodies with flat surfaces; explanation of the phenomena of sight, and consequently the first notions of perspective; practice in regular curves and spiral lines, as ground forms for ornamentation. Course II. Drawing of simple Roman ornaments from wall-charts, and, if feasible, likewise from casts. Drawing of the proportions of the human head and its divisions, in simple outline. Course III. Continuation of practice in drawing from wall-charts and from the round. Drawing of the human head and of its separate parts on various scales. Linear drawing: Laying out, dividing, and measuring of straight lines, plane angles and figures, construction of scales with the aid of ruler and instruments." The numerous specimens exhibited by the various Seminaries made it evident that these demands are only partially complied with. It must also be noticed, that none of the institutions had arranged their drawings in systematic order, so that no insight could be gained into the method. The want of good originals likewise made itself frequently felt. Except in the institutions at Straubing and at Rosenheim, Herdtle's Ornaments, which are so practical for the People's Schools, were nowhere to be found. As a general rule antiquated ideal forms are copied, which indeed remind one of the antique, the Renaissance, or the Gothic style, but are so lax that they might rather be said to represent the tendencies of the Baroque epoch; it is the same with figure-drawing, which, however, is practiced only incidentally. Drawing from casts shows good results wherever it is preceded by good outline-drawing.

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INDUSTRIAL IMPROVEMENT SCHOOLS.

We shall now turn to the schools in which drawing is practiced mainly in the interest of industry, i. e., to the Industrial Improvement Schools, and to the Industrial and Technical Schools proper. Nearly every more important place in Bavaria has its Industrial Improvement School, most of them supported by the communes, in which partly purely industrial, but sometimes also agricultural and commercial interests are cared for. It is the first aim of these schools to give to the artisan the elements of general education, rather than to prepare him for his special calling, so as to train able men in the industrial classes, who shall unite a certain intellectual maturity with a knowledge of their specialty, and who shall be equal to the demands made upon them by the social and political life of to-day.

Nobody will deny that drawing is called upon to play an important part in these schools. It must be employed to exert a purifying influence upon taste, and must also give that necessary technical skill which is so directly applicable to practical life. The former can be reached only by means of a systematic course of instruction, with good examples, while the latter will depend upon the activity and the diligence of the pupil. On the whole, the Bavarian Industrial Improvement Schools, to judge by the specimens exhibited, leave much to be desired as yet in both respects. The main reason for the poor results may, indeed, be sought in the fact, that the preparation of the pupils in the elementary schools is exceedingly unequal, and that the weaker part of the pupils of these preparatory classes generally finds its way into the Improvement Schools; but local circumstances which hinder a systematic prosecution of the course of instruction must also be taken into account. Good drawing-copies would therefore be of the most urgent necessity in the drawing-classes. But whoever looked over the portfolios of this category of schools was compelled to acknowledge, that, for the present, there are great defects existing in this respect. Forms of ornament are still commonly in use which are antiquated, and which but rarely have any reference to practical application. As regards the *technique*, shading is mostly commenced too soon; the drawing of forms is frequently abandoned too early, and recourse is had to making pictures of landscapes. In linear drawing, the elements of geometry are wanting in most of the schools; instruments are used in the first stages in drawing decorations of surfaces, mosaic floors, &c.; and these exercises are followed up by projection and architectural drawing.

WÜRTENBERG.

For years Würtemberg has taken the lead of all other German States in the cultivation of industrial education; and even to-day it is in possession of the greater number of the schools of this kind, relatively speaking. At the last Paris Exposition, the achievements of these schools made an imposing impression, and in Vienna they likewise formed the centre of attraction in the German Educational Exhibition. The numerous drawings, modellings, and other art-industrial works, took up a large part of the Northern wing of the pavilion of Group XXVI. of the German empire, in part serving as decorations for the walls, and in part being exhibited in portfolios or in showcases.

It was surprising to see that the work is everywhere carried on with nearly equally good results, and that even the youngest schools were represented by the most praiseworthy specimens. This shows how excellently the whole educational system of Würtemberg is organized in this respect, and how beneficial unity of system is to education itself.

Unfortunately the results only of the schools had been kept in view in the Exhibition, and the method had not been illustrated by successive drawings; which, in the presence of the results, would have been especially desirable.

Industrial Improvement Schools are at present to be found in 155 places (110 cities, 45 villages) of the kingdom of Würtemberg; and these, according to their organization, are divided into the following groups:—

Improvement Schools, in which instruction is given on Sundays and evenings, in the industrial and commercial branches, and which have public drawing classes (5).

Improvement Schools, with industrial instruction Sundays and evenings, and public drawing classes (15).

Improvement Schools with instruction on Sundays and evenings, without public drawing classes (92).

Improvement Schools with industrial instruction in the evening, without instruction on Sundays (10).

Drawing Schools simply, without further instruction (33).

The number of pupils, amounting to 8,876 in 150 Industrial Improvement Schools in 1870-71, rose to 9,763 in 1871-72 in 155 schools; 7,430 of the pupils being under, and 2,333 over, seventeen years of age.

Besides these schools, the country possesses of technical institutions of learning, the Polytechnical School and the Building-Trades School at Stuttgart, and, for the special cultivation of art, the Art-School at the same place.

It is impossible to review the achievements of each separate school without exceeding the space at command; but it will probably suffice, for the purposes of general characterization, to touch upon the most noteworthy only.

THE COPIES FROM WHICH ELEMENTARY FREE HAND DRAWING IS TAUGHT IN GERMAN AND AUSTRIAN SCHOOLS.

In freehand drawing, a beginning is generally made with the drawing-copies by Herdtle, published by the Royal Commission on Industrial Improvement Schools.

This excellent work has also naturalized itself in most of the German and Austrian schools, and is especially used to practice outline-drawing in systematic progress from geometrical ground-forms to curvilinear ornament; at the same time it offers an opportunity to give the pupils simple exercises with the brush in laying flat tints. When a certain dexterity of conception and of technical execution has been reached, object-drawing is taken up, beginning with geometrical forms, but immediately passing on to ornaments in plaster, at first in outline, and by degrees in shading.

For this purpose there were executed in the modelling institution of the Royal Wurtemberg Central Bureau for Industry and Commerce, a series of more than four hundred plaster models, which are also arranged progressively, beginning with straight-line geometrical forms, and then, from the simplest leaves, passing on to richly developed ornaments which are composed for given spaces, thus showing their eventual practical application. In style, the motives belong almost exclusively to the Renaissance, a few only having been selected from the Gothic and the older antique styles.

To aid in the transition from conventionalized to natural plant-forms, casts of plants, &c., have also been admitted into the collection. For figure-drawing there is a collection of casts from antique busts, torsos, limbs, reliefs, and small statuettes; a series of models for the study of theoretical forms has likewise been added. A large part of this excellent collection was on exhibition, together with an illustrated price-list.

PRUSSIA.

In the provinces of Prussia drawing is well managed wherever the teacher happens to be versed in the subject. This observation very naturally leads us on to the consideration of instruction in drawing in Teachers' Seminaries, whence its cultivation in the People's Schools must necessarily proceed. Down to the present this instruction was very incomplete; and, according to the report already quoted, it was frequently in danger of dying out altogether, owing to the isolated situation of some of the seminaries. But little time being devoted to drawing, and the drawing-teacher being therefore left without adequate employment, the subject was generally intrusted to one of the teachers of science. Suitable teachers were to be had only in the larger cities, which is the reason why good results were generally obtained in those places. If the later regulations in regard to drawing in the People's Schools are to be carried out, the government will have to see to it that due attention is paid to the subject in the seminaries.

In regard to instruction in industrial drawing, the North of Germany is also still far behind the Southern countries. Not very long ago, every thing that was done to advance art-industry emanated from private societies only, and the Prussian government was the most tardy of all the German governments in devoting due attention to this most important factor of wealth. Up to about ten years ago, there were no institutions in Prussia capable of extending adequate support to the art-industries, the only exception being the "Society of Mechanics" of Berlin, which was especially instrumental in advancing the joinery and the weaving of Northern Germany to a certain degree. The Municipal Industrial Schools provided for a more general scientific education, rather than for special instruction; nor was the organization of the Improvement Schools calculated to make them the hotbed of art-industrial instruction, while the Sunday Free Schools were totally inadequate. The Royal Industrial Institution has more of the character of a technical school, and the Royal Academy of Art is given to art exclusively, so that even from this side little was to be expected for art-industry.*

* Concerning the condition of art-industrial instruction in Prussia up to the year 1866, compare: "The Advancement of Art-Industry in England, and the Position of this Question in Germany," by Dr. H. Schwabe, part iii, p. 188, &c.

WORK OF THE PRUSSIAN INDUSTRIAL SCHOOLS AS RE-ORGANIZED IN 1870.

By the Plan of Re-organization of March 21, 1870, the complete course of the Prussian Industrial Schools was extended to three years, and the modern languages were incorporated into the plan of instruction. In consequence of more rigorous conditions of admission, the aim of instruction was elevated for most of the subjects, and linear drawing especially profited by these new arrangements. Generally speaking, the schools retained the character of technical schools, which is quite plainly expressed in the preamble of the Plan of Re-organization. It says: "The youth entering upon industrial life must be able to examine the progress of other nations in the departments of technology and of industry, and to put this progress to use in his own interest, as well as in that of the community. To this end it is necessary that he should have attained a knowledge of the French and English languages, sufficient at least to enable him correctly to understand the works written in them. The physical conditions of the earth's surface, its relation to the aquatic, vegetable, and animal world, must not be unknown to him. Finally, he needs an insight into the history of the development of nations and of states, into their intercourse, and their commercial relations with each other."

It is apparent, that these higher industrial institutions are not intended for the education of the working people, but that they are only fitted to offer to the wealthier classes the opportunity for general improvement in harmony with the spirit of the times. The organization of preparatory classes, as "Lower Industrial Schools," is left to the respective communes wherever it may be necessary. Art Schools and Industrial Schools of a more comprehensive kind are at present to be found in Prussia only in Berlin, Dautzic, Breslau, Erfurt, and Magdeburg. As for the rest, special schools in Prussia are but slightly developed even to-day; an exception is made only by the department of manufactures, in which a satisfactory advance in this respect is to be noted. But the need of such schools is becoming more apparent from year to year, and by degrees the government is likewise beginning to look more favorably upon the matter.

GERMAN GOVERNMENT CALLS ATTENTION TO IMPORTANCE OF THE INDUSTRIAL ART TRAINING OF THE FRENCH.

Immediately after the war with France, the authorities of the various industrial towns of Prussia were called upon, in a circular issued by the Ministry of Commerce and Industry, *to follow the example of France in the organization of Drawing and Industrial schools; and their attention was directed to the industrial importance of these schools, and to the fact that they form the true basis of the wealth of France.* Regulations in regard to teachers of freehand drawing and modelling at the Industrial Schools were prepared at the same time.

It was impossible to judge from the Exhibition how far these efforts have since been realized. Only the "Society of Mechanics" of Berlin had provided a comprehensive presentation of its activity, as regards the organization and the development of its schools. Statistical tables, reports up to the year of the Exhibition, and the plans of the building of the society, were submitted.

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ADMIRABLE SERIES OF STUDIES FOR USE IN INSTRUCTION IN DRAWING AND ART.

The pupils of the Royal Building Academy exhibited the wall-charts for art-historical instruction in use in the institution, and the "Examples and Studies" executed from the designs of Prof. C. Böttcher, a magnificent collection for the illustration of art-historical lectures as well as for studies in copying. We may mention also, that the "Grammar of Ornament," edited by E. Jacobsthal, according to the principles of C. Böttcher's "Tectonics of the Greeks," was exhibited as an aid for teaching in higher architectural schools. The students likewise exhibited the autographed drawings made by them, as studies of architectural monuments. The publication of these drawings commenced in 1872. Besides being well-chosen and neatly executed, they offer an advantage in this, that they are all drawn to the same scale, which facilitates comparative study very materially. This interesting work, of which four parts have already appeared, began with antique, ancient Christian, and Romanesque architecture, and will embrace the works of the Gothic style and of the Renaissance, down to modern times. Incidentally it may be remarked, that the price of twenty-five silver groschens, for each part, is amazingly cheap.

The influence of Schinkel made itself felt to such a degree, more especially in the architectural schools of Berlin, that his spirit still animates their productions; and,

if his creative power has not been inherited by his school, he has at least left to it his artistic principles. The character of the technical tendencies of architecture in Berlin was shown most conspicuously by the more important publications in this department.

The world-renowned firm of Ernst & Korn truly forms the central point for the whole of Germany, for publications of this kind; and the works exhibited by it occupied nearly a whole section of the middle tract of the pavilion of Group XXVI. It would lead too far were it attempted here to review all the later issues. These works are well known to specialists everywhere, and a simple mention of the praiseworthy activity of the firm must therefore suffice.

Of other more important publications concerned with drawing and art-education, and to be seen at the Exhibition, the "Wall-Charts of Antique Life and Art," by Prof. E. v. d. Launitz, must be placed at the head of the list. The introduction of art-scientific instruction into the Middle Schools began with these charts; and through their instrumentality the question as to the necessity of this study was first fairly started. The work has been widely disseminated, and does not need any further recommendation. The "Ornaments of all the Classical Epochs of Art," by W. Zahn (1870), are very beautifully executed in color, but too small to be of use as copies. The "Ornamental Copies," by Bogler (Wiesbaden, Roth) are distinguished by simplicity and perspicuity of form; the "Ornaments," by J. A. Müller, issued by the same publisher, also deserve to be mentioned.

OTHER SERIES OF ART STUDIES CRITICISED.

Domschke's "Drawing of Ornaments," in two crayons, is not as commendable; the motives are stale, and the execution hard and black. The "Drawing-school in Wall-Charts," by Troschel, is good as far as instruction in form and in ornament is concerned; the continuation in figure-drawing is objectionable; the charts for projection are superfluous. Projection must be demonstrated by the teacher, and the figures must be drawn upon the blackboard by him.

The "Berlin Systematic Drawing School," by W. Hermes, was represented by its jubilee edition of 1872, in nineteen volumes. For amateurs these things may perhaps do; for serious instruction in drawing they are not fitted.

The various pictures for the lower grades of object teaching were surprisingly deficient. With the exception of Schnorr's Bible Pictures, none of them rose above the level of the ordinary picture-sheets for children.

SAXONY.

The exhibition made in the Pavilion of Education by the Royal Saxonian Government principally embraced, according to the preface of the special catalogue, "only such aids for teaching, and other objects for educational purposes, as owed their origin to the *savants*, schoolmen, and manufacturers of the kingdom." But further on we find it stated, "that even in this respect it was impossible to present a complete picture, as only very few of the numerous and important works relating to the subject, and emanating from the university of the country and from its technical high schools, had been sent to the Exhibition."

Any further information as to the reasons for this omission was not supplied; but it appears that the question of space had prevented a more comprehensive display of the Saxonian Educational Exhibition. This can only be regretted, as it is well known, that education in Saxony, both general and industrial, occupies a very high position. In regard to general arrangements and statistics, the necessary information was given by a report which had been specially written for the Exhibition.

Industrial instruction in Saxony is adapted to the necessities of the working classes, and, compared with Prussia, the special schools have been developed much more extensively. Drawing consequently plays a more important part throughout the Industrial Schools of the country as it becomes a necessity wherever special branches are to be successfully cultivated. The education usually received in the People's Schools is accepted as a preparation by most of these institutions; the courses extend through three years (in winter only), the pupil continuing to work at his trade in the mean time. This is the case, for example, in the Building Trades Schools of Chemnitz, Leipsic, Plauen, Zittau, and Dresden. Saxony also possesses a considerable number of Weaving Schools, among which those at Chemnitz, Glauchau, Frankenberg, Oederna, Werdau, Gross-Schönau, Hainichen, Limbach, and Mittweida are the most prominent. The wooden-ware and toy manufactories of the Saxonian Ore-Mountains have also received some attention of late, and drawing and painting schools have been opened in Seiffen and Grünhainichen for their benefit.

As previously remarked, there was little to be seen of specimens by the pupils, only the Technical High Schools at Dresden and at Frankenberg having made a display of any extent. Drawing-copies, models, and other aids for instruction, made up the rest of the exhibition.

By the People's School law of 1873, drawing has also been made compulsory in the lower schools, in some of which, however, it had already been carefully practiced before. The drawing-copies of H. Schmidt and W. Zimmerman (teachers in the Middle Schools of Zwickau) must here be mentioned before all others as very superior aids for teaching in the first stages of instruction. According to Schmidt's method, the simplest geometrical ground forms are drawn upon the blackboard by the teacher, to give to the pupils an insight into the formation of the figures; at a later period, the more complicated forms, together with their guiding-lines, which are given in red, are copied freehand from examples. The lines of shadow must be found by the pupil himself, the teacher having previously explained them, after which the back-ground and intermediate planes are filled in with flat tints.

Zimmerman's copies pursue the same method on the whole. The forms are marked in strong black outlines, and relieved by colored tints, which adds measurably to their distinctness at a distance. The guiding-lines, which the pupil must erase after he has sketched his drawing, are given in red dots.

These methods banish all mechanical aids, and aim at the education of the eye, as well as of the hand. As a basis for the copies in question, which are exemplary as far as method is concerned, the "Little Draughtsman," by F.W. Tretau, professor in Chemnitz, has been used, while, for the ornamental forms, the works of Herdtle and Weishaupt have principally been drawn upon.

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Besides the drawing-copies alluded to as being in use in the schools of Zwickau, the plastic "Models for Freehand Drawing and Modelling," issued by the Royal School for Modelling and Pattern-Drawing in Dresden, must also receive honorable mention. These models were designed by Prof. Krumbholz and Hänel, and are intended to continue the instruction in drawing, from the elementary stage up to the round. The collection consists of three series,—the first embracing leaves in symmetrical as well as in natural arrangement, together with ornamental motives, these latter principally in the style of the Italian Renaissance; the second series comprises larger details of ornaments in successive development, up to complete ornaments (in the same style) with reference to their local application; while the third series embraces pure severe ornamentation on the one hand, and examples of a naturalistic tendency on the other, thus demonstrating to the more advanced pupils how plant-forms may be utilized for ornamental purposes. The publication of this collection was not undertaken as a business speculation. The models owe their origin, in the first instance, to the necessity of providing the institution which produced them with good plastic examples, fitted to educate the taste and the feeling for the beautiful; and, as it was desired to enable other institutions to share in the benefits to be derived from the use of the models, the price of the casts (executed in the casting-shop of the institution) has been placed so low that even the poorer schools can afford to buy them. Series I. (twelve models) costs six thalers; Series II. (twelve models), nine thalers; Series III. (nine models), ten thalers.

The choice of motives in these models, and their systematic grouping, must be called excellent, while the execution is truly exemplary. In original models even, the edges are but seldom found as sharp and as clean as in these casts, which are herewith warmly recommended to all institutions.

Other smaller works by various authors, which were likewise exhibited, did not offer anything specially noteworthy. Seltmann's models for instruction in drawing (wooden solids of various shapes capable of forming a variety of figures) are somewhat clumsy. Fröbel's useful stigmographic copies for the first stages of instruction are well known. As aids for object teaching, there were exhibited the Bible Pictures, by Schwarz and by C. Ehrenberg; also "German History," in pictures by various authors, and Overbeck's magnificent "Atlas of Greek Art-Mythology," for the higher educational institutions. Two volumes of this extensive work, "Zeus" and "Hera," have so far been issued.

HESSIA.

The Grand Duchy of Hessa exhibited almost nothing but specimens by the pupils of the Artisans' and Improvement Schools. These institutions, the first of which were opened in Darmstadt, Mayence, and Giessen in 1838, have increased considerably since then, so that now each little town in the country possesses one of them. The attendance is voluntary everywhere; and, until quite lately, the instruction, to which apprentices and journeymen are admitted, was gratuitous; at present, the

pupils are charged a moderate tuition-fee (six to thirty kreutzers per month), but the notoriously poor are exempted from its payment, and in some of the schools are even provided with the necessary writing and drawing materials free of charge.

The main stress in instruction is laid upon technical drawing, to which are added the other branches, such as geometry, arithmetic, style, &c., with reference to practical wants. In view of the shortness of time, the schools confine themselves to that which is the most necessary and useful for the working-man, while the branches of education of lesser importance are passed over. No premiums are given to the pupils; but every year their work is submitted to a special commission, by whom it is examined, and reported upon. The general part of this report is published, while the part devoted to special criticism is communicated confidentially to the school-committees and teachers.

The Hessian Industrial Association has rendered great service to these schools, whose influence upon the industries is so beneficial. The first impetus toward their organization was given by this society, and it has since done all in its power to advance the schools, and to increase their number. But the most important part of its activity consisted in the encouragement which it gave to the publication of practical and suitable copies. The basis for this excellent collection for all branches of industry was laid by the former secretary of the society, the present Grand Ducal Upper Building Councillor Rössler. The "Drawing Copies for the Artisans' Drawing Schools in the Grand Duchy of Hesse," as well as the "Technical Designs, and Designs for the Various Branches of Industry," which were issued at a later period, have gone through repeated editions, and have been disseminated far beyond the limits of the country for the schools of which they were originally designed. By reason of their simple, practical representation, they will always remain an excellent aid for teaching in all industrial schools. The activity and the care which the society in question has devoted to the advancement of the industries were most beautifully illustrated by these examples at the Exhibition.

In view of the fact that these schools have evening and Sunday courses only, the work of their pupils must not be criticised as severely as if it were the production of day schools; it showed honest, conscientious effort throughout, very generally also accompanied by good results. Machine-drawing is principally cultivated; but some of the schools exhibited also very neat freehand drawings from copies and casts. For the benefit of technical linear drawing, it would appear desirable, however, to pay more attention to projection; many of the schools were very deficient in it. Very good exercises were to be seen in outline ornament, which is more useful than painstaking finish in shading, wherever there is lack of time, even for the better schools.

Of further aids for teaching in drawing, the models by J. Schröder again held the first rank, the same as at previous exhibitions. This rich collection contains representations in geometry, descriptive geometry, machine building, stone constructions, railroad building, carpentry, metallurgy, and agriculture.

HAMBURG.

There is hardly another city in Germany at present, in which drawing is taught as carefully and as conscientiously as in Hamburg. By the united action of the intelligent and capable teachers employed in the General Industrial School of the city, a definite method of teaching has developed itself in this institution (now also introduced into the People's Schools), which deserves to be called exemplary in its well-ordered, gradual progress. The favorable impression made upon the visitor by the exhibition, was not, however, to be alone attributed to the excellent results which were shown, but also to the painstaking arrangement, the conscientious adjustment of the whole, by means of which the aim of the exhibition—to give an insight into methods and results—was completely attained. There were on exhibition specimens of the achievements of the Elementary Schools, the General Industrial and the Building Trades School, and of the Industrial School for Girls; the systematic course of instruction was shown by the usual drawings, arranged upon revolving stands. Before entering upon our review, we will endeavor to give a short general sketch of the organization and the arrangement of the institution under the excellent management of O. Jessen.

The General Industrial School in Hamburg was opened in 1865: its aim being to provide the scientific knowledge and artistic education which is necessary to all who are engaged in industrial pursuits, but which cannot be acquired in the workshop.

IMPORTANCE GIVEN TO DRAWING.

Alongside of the other scientific and commercial branches, the widest field is given to drawing; and, taking the various classes together, not less than 218 hours each week are devoted to it, which are distributed as follows:

	Hours.
Freehand drawing	66
Drawing with the aid of compasses	28
Special drawing for building-mechanics, joiners, &c.	8
Special drawing and lecture for shipbuilders	6
Special drawing for machinists, locksmiths, &c.	8
Special drawing for tinsmiths, &c.	4
Special drawing for painters, sculptors, &c.	12
Special drawing for lithographers	8
Drawing from living plants and animals	8
Forms and color applied to art-industry	2
Drawing and designing of ornaments	8
Decorative painting	10
Modelling in clay	6
Elementary drawing for boys	44

Instruction is given on week-days from five to nine in the evening, and on Sundays from eight to twelve in the morning.

The School for Building-Mechanics, under the same management, offers a thorough and comprehensive theoretical education, and special training in drawing. The complete course can be finished in three winters; 112 hours each week are given to drawing, which are divided among the various branches as follows:—

	Hours.
Freehand drawing	30
Drawing with the aid of compasses	10
Descriptive geometry	18
Architecture, construction, estimates, working-drawings	54

Instruction is given daily from eight o'clock in the morning until seven in the evening, with the necessary intermissions.

In the General Industrial School there are also three additional courses of elementary drawing for boys.

Yearly exhibitions of the work of the pupils are held at Easter, but no premiums or other marks of distinction are distributed.

In the united institutions there are at present employed, besides the director, 18 teachers, and 15 assistant teachers. The number of pupils rose to 1161 in the winter half-year of 1872-73. This number is sufficient evidence of the practical management of the institution, but its excellent reputation is mainly owing to its success in drawing.

METHODS OF TEACHING DRAWING IN HAMBURG SCHOOL.

The method of elementary instruction may be briefly stated as follows: The pupils begin with drawing in squares, practicing the straight line in the various directions, in its combination in frets, borders, &c., progressing gradually to more complicated star-shaped figures. The teacher draws upon the blackboard, which is divided into squares, the pupils at the same time drawing upon slates, and at a later period into books. This is followed up by a short but thorough exercise: 1, changing a figure into its opposite; 2, transformation of the opposites; and, 3, combining new forms. Finally the teacher also causes the pupils to draw figures into the squares, from figures which he has drawn upon the blackboard without squares. At this stage the instruction therefore adheres in general to the principles of Fröbel.

The next thing is drawing from printed wall-charts, at first in classes, then in sections, and at last individually. Instruction in drawing is separated from systematic instruction in the knowledge of form. The wall-charts offer only plane figures in front view, and without guiding-lines. The latter must be found by the pupils themselves under the direction of the teacher. A commencement is made with straight-line figures, which are drawn simultaneously upon the blackboard by the teacher (from Dr. Stuhlmann's Wall-Charts), and these are followed up by curvilinear ornamental forms (from the Wall-Charts by H. Wohlien).*

*According to a private communication H. Wohlien's charts only will be used in future.

pupils have acquired the necessary skill in these exercises, drawing from objects is taken up with each pupil individually.

Each pupil (sometimes also two or three) draws from a separate model, which is placed before him at a distance of from 1 to 1.5 metres.

The pupils must acquire the facility of discerning, estimating, and representing the changes caused by the perspective by means of simple observation in gauging with their lead-pencils. The beginning is made by F. Heimerdinger's wooden models; these are succeeded by simple models in plaster, and by utensils, with reference to light and shade.

In the upper sections of the girls' classes the drawing of designs for embroidery is added to the previous subjects, the pupils being first made acquainted with the most important elementary forms, then led to the application of a given form to various uses, and finally instructed in the making of original designs.

In the Industrial Schools, drawing is practiced from models only, at first simply in outline, then gradually progressing to shading, the various means of representation being employed in the course of the instruction. Figure-drawing is practiced only by those whose calling requires it.

The specimens exhibited gave proof that all branches of drawing receive careful attention in the institution, that the study of ornament is supported by the study of plant-forms, and that the incitement to self-activity in composition is not neglected.

The objects exhibited by the pupils of the special courses for decorators, joiners, &c., showed in the practical, simple construction of the forms, and in the correct formation and application of ornament, that the school follows with zeal in the track of the reformatory tendencies which are making way for themselves in England and in Austria. In the drawings of the objects, which drawings are not to be used as pictures, but are produced simply with a view to their practical execution, the readiest means are employed, and all superfluous painting and time-taking finish is avoided.

Drawing and modelling only are practiced in the institution; and it is left to the opportunities and to the diligence of the individual pupils to execute in their shops the designs which they have made in the school under the direction of their teachers. This is a very excellent means of transplanting the advantages of the school directly into the industries, and thereby keeping alive the interest in the school among the tradesmen. Several objects were on exhibition which had been produced through the instrumentality of the institution in this manner, and which gave evidence of a very refined taste. Specially prominent among these objects were the works of the joiners. In modelling (plaster and wax) ornamental and figure subjects had been executed, and the exact, severe treatment of the forms deserved all praise.

Linear drawing is carried on quite as systematically as freehand drawing, and the geometrical constructions always find their application in practical examples. Truly excellent work was especially shown by the School for Building-Mechanics, which also exhibited very pretty architectural designs. The execution of the drawings was as precise as it was simple; and so-called exhibition-drawings, only calculated to catch the eye of laymen, were nowhere to be seen.

The St. Pauli Industrial School, which is under the care and the administration of the General Industrial School since 1870, also submitted very good work.

Although the Industrial Schools of Hamburg were not brilliant in pompous tableaux, rather contenting themselves to exhibit their achievements to the public in a more modest form, they nevertheless attracted the attention of specialists to a high degree, and gave thorough satisfaction on all sides, for the very reason that their appearance was so unostentatious.

The institution sent almost all its teachers to visit the exhibition at Vienna; and the increased experience there gathered will no doubt contribute to the further development of the schools.*

In 1867 there was also opened in Hamburg a Girls' Industrial School (instruction during the day), which embraces all the branches of general education, and in which drawing is likewise cultivated with especial care. In the higher classes of this school attention is devoted more particularly to the designing of patterns. The instruction commences with the representation of simple linear ornaments, borders, &c., executed from slight sketches; and this is succeeded by attempts at composition, for rosettes, decorations for flat surfaces, &c., in their application to the dress, and for other domestic purposes.

*It was only to be regretted that the Hamburg Industrial Museum had but a limited supply of funds to make purchases of art-industrial objects at the World's Fair. In this respect the collections of Germany, Austria, and Russia had been more abundantly provided for.

The drawings and finished objects which were exhibited gave evidence of surety in the handling of form, and of a healthy feeling in original composition. Many of the patterns invented by the pupils of the institution have found their way into various journals of fashion. The specimens by the pupils of the "Society for the Advancement of Female Industrial Activity" likewise deserve honorable mention.

The Girls' School of the Women's Society in Paulsensstift also submitted drawings, which illustrated the practical character of the method in use in Hamburg.*

FRANCE.

With no nation has drawing, as such, played a more important part, for upwards of a century, than with the French. In truth, it might be said, that their wealth is owing principally to their drawing-schools, which are the mainstays of their industry, even to-day. We would have to go far back into the past did we wish to seek for the causes which have enabled the French to raise themselves to the mastery of the world in the departments of art and of art-industry, and to maintain themselves as the recognized leaders of taste down to the very present. The first impulse towards the emancipation from blind submission, on the part of other nations, was given by the contests at the World's Fairs; and, under the leadership of art-science, a campaign was opened against the weaknesses and the defects of established French custom. England energetically took the lead; Austria and Germany followed, the latter, however, only in part. Thanks to the Museums and Art Schools, the reform, which took its rise at the London Exhibition of 1851, has advanced victoriously thus far, and has produced a change of forms, even in France. But with the French—highly-gifted artistically as they are, and with past successes upon which they can justly look with pride—the inherited traditions are too strongly rooted to make a rapid revolution possible.

It cannot be gainsaid that all efforts in the direction of art, although they arise unconsciously in every civilized nation, can be superintended, directed, and fostered much more readily to-day than in former times. This is first of all owing to the fact, that, as a result of the great activity displayed in the field of art-scientific research, the classics of the past have been put at our disposal, and can be used as a means for the education of taste by being presented to the people in collections. But besides these we have also the drawing-schools, or, more generally speaking, instruction in art, by means of which a direct influence can be brought to bear upon the productions of art and of art industry. In England and in Austria, these means for the reform of taste are in successful operation. In France, museums and collections have, of course, been in existence all along, but they were only called to mind again, as a means of art-industrial education, by the opposition which used them as a basis of operations in its warfare against inherited French traditions in matters of art. The energetic efforts lately made in France to exert a purifying influence upon the education of taste, by instruction in drawing, cannot be mistaken. But little value was formerly attached in the French drawing-schools to the cultivation or the perfection of any definite tendency in style. The celebrated national art of the French was brilliant only in technical dexterity, in the facility of imitation, in exterior qualities, in all of which it stands unsur-

**Industrial Schools at Hamburg.*—According to the last yearly report (1874) of the "General Industrial School, and School for Building-Mechanics," the city of Hamburg has voted eight hundred thousand thalers (about six hundred thousand dollars), for a building which is to accommodate the school in question, together with the Hamburg Real-School and the Industrial Museum. The rooms set apart for the Industrial School will embrace nineteen drawing and modelling halls, seven classrooms for scientific instruction, several rooms for collections, and the necessary offices, &c. The great service which the Industrial Museum renders to the school is fully acknowledged in the Report, and the importance of instruction in drawing in the People's Schools is thus alluded to: "It is of equally great importance to the activity of the Industrial School, that instruction in drawing is carried out rigidly and systematically in the Hamburg People's Schools. Even now (i. e., after drawing in the People's Schools has been taught only a short time) many of the pupils come to the school with a much better preparation than heretofore; and it is therefore possible to make good draughtsmen of them while they are still apprentices." The "*Industrial School for Girls*" also possesses a building of its own, which was commenced in 1872. This school was called into life by the "Society for the Advancement of Female Industrial Activity. Being a private enterprise, the cost of the building, one hundred thousand marks (about twenty-five thousand dollars) was raised by subscription; but the city donated the land (twenty thousand feet) upon which it stands.—*Transl.*

passed, even to-day. Henceforth, however, the position of their industry will depend upon the measure of success with which they may apply their technical skill to scientific and purely artistic efforts. Undoubtedly the competition at the Exhibition of 1873 has again exercised a far-reaching influence upon France.

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We must now endeavor to answer the following questions: What is the prevailing tendency in the schools in regard to style? And what position does art-instruction in general occupy in France at present?

As regards the first question, the most important point, which we will have to place above all others, is this: "*What is it that is drawn in the schools?*" for the practical draughtsman will finally express himself in the forms in which he was trained, or will at least find pleasure in them. The importance attaching to copies, models, &c., has long been recognized in France, and for decades Parisian firms have ruled the world by the drawing-copies published by them.

EVOLUTION IN METHODS, AND IN MATERIALS USED IN TEACHING DRAWING.

Julien, with his numerous works, was the leading author until after the year 1850, and not in France alone. His smoothly-executed heads, his showy ornaments,—taking to the eye, but of doubtful value for rational instruction,—were to be found wherever there were drawing-schools. With such models figure-drawing must of necessity go astray; an observation which was again confirmed at Vienna by the specimens exhibited by those institutions in which the older publications of this author are still in use. Besides Julien's copies, there were also employed simple ornaments (of which those by Bilordeaux were perhaps the most elegant), and, above all, studies of flowers. Standard examples of the latter class were produced quite early, and are still being produced; for in them lies the most important element of industry.

Now came the World's Fairs, and competition demanded forms of greater precision in industry. But these could be introduced only by new means of art-instruction.

The revolution that has been consummated in the department of art-instruction in France, within the last few years, is a most portentous sign of the gradual revolution of taste in French art-industry. Drawing-copies no longer spring into existence out of the imagination of individuals; a stricter method is pursued in the selection of motives, and a return to the classics has taken place. The firm "Julien" itself brought out "*Etudes d'après l'Antique*;" but these unfortunately were again too bold, too broad in treatment, to be useful as standards in the elementary stages of figure-drawing. In ornament the Renaissance was at first gone back to; but finally motives and forms from the whole range of art-history were presented in the copies, beginning with the Hindoos, Egyptians, &c., and reaching down to the latest Rococo. The imitation of the most varied styles in modern French industry may have some connection with this fact. A number of prominent publishers, such as Delagrave, Delarue, Ducher, Monroq Frères, Baudri, Morel, &c., have produced truly magnificent works of this kind. The return to classical examples, and more especially to the antique in figure-drawing, has continued to increase since the last Exhibition; and the government of France, even up to the present time, has given its support to these efforts. To be sure, the fruits of this movement, generally speaking, are not visible as yet; but it must be acknowledged that energetic efforts are making everywhere to introduce purer elements into form.

VARIOUS COURSES OF ART STUDIES APPROVED.

Of the latest publications to be seen at the Exhibition, mention must be made before all of F. Ravaissou's "*Classiques de l'Art, Modèles pour l'Enseignement du Dessin*." Most of the photographs of which this series consists are taken from the classical plastic works of the Louvre, the rest being from drawings by the old masters; and they are treated in a manner which makes it easy to copy them in crayon or other material. An excellent management of light, together with well-chosen backgrounds, give the greatest lucidity to the form, especially of the plastic objects. The work embraces two hundred plates, but is unfortunately too luxuriously gotten up to enable it to come into general use. Price, eight francs each plate.

In accordance with a desire of the government, it is to be introduced into all the Drawing-Schools, Lyceæ, &c., of France, for the purpose of purifying taste by means of the antique, and of giving unity to ideas on art. For the present, however, only a few of the Parisian schools possess it. In the provincial cities, where the older elements are as deeply rooted, these modern efforts are sometimes forced to contend against gross prejudices.

The "Cours de Dessin par Ch. Bargue (avec le Concours de Gérôme)," outdoes all earlier productions, although it is more general in its tendencies. The first part contains sculpture from antique models in exceedingly delicate, picturesque treatment; the second part brings us faithful copies from classical works of various kinds, drawings by the old masters, &c., of all epochs, among which the "good" German masters have not been forgotten. The execution is slight, but exact, and in only one crayon. These superior examples (published since 1868) have already found their way into many of the Austrian schools; and their general introduction is most desirable.

The "Exercices au Fusain pour préparer à l'Étude de l'Académie d'après la Nature" (Hachette, 1871) can be put to excellent use in higher drawing-schools, as a preparation for academical studies. The work consists of sketches only, and special attention is devoted to quick comprehension and correct proportioning of the figures. Among the publications of Monroq Frères, the "Grand Cours d'Animaux," by H. Lalaise, is to be singled out; the execution is somewhat bold, but the forms are rendered with considerable knowledge. The "Modèles d'après la Nature," by J. Ducollet et Felon, on the contrary, go back again entirely to Julien's manner.

Of ornaments the "Cours d'Ornement," by Lièvre (Goupil, 1868) must be placed at the head of the list, as being superior in its choice of motives. The objects—original models in all styles—are represented in a manner easily comprehended, on paper of a light-gray tint, in crayon underlaid with the stump.

With examples of this kind, it is indeed easy to teach the styles in the drawing-classes. A similar work, but one which embraces the history of art still more fully, is that of Camille Chazal (Hachette). The first plates represent Egypt in figure, ornament, and architecture; the Orient follows in a similar manner, then the classics of antiquity, and so on down to the Renaissance. In the last part, on French art, the object of the plates, to serve as drawing-copies, has unfortunately been lost sight of somewhat; the smaller *genre*-pieces might have been left away quite as well. The work compiled by the meritorious Frère M. Victoris, "Enseignement Populaire du Dessin d'Ornement," intended for elementary instruction in ornament-drawing, is carried out in a similar spirit. The motives are given in outline with geometrical lines, lightly shaded, and in historical order. This work has been introduced into most of the primary schools which are under the care of the "Congregation of the Brethren of Schools;" farther on, we shall have to speak of its successful employment in instruction. In the same schools, the "Cours d'Ornement," by the Frère Athanase, conspicuous for its easy, elegant execution, is likewise frequently in use. The forms begin at once upon the first plates with palmettos, spiral lines, &c., and advance to motives of moderate difficulty, which are culled from the classical monuments of the Renaissance, of the Greeks, Romans, and Etruscans, and of the Gothic style. They are executed in *one* crayon on paper of a light tint.

ESSENTIAL CHARACTERISTICS OF FRENCH DRAWING COPY COURSES.

Series of copies for the first stage of instruction have been produced in Paris in large masses of late years; and, on the whole, it may be remarked, that the principal aim held in view, even at the very beginning of instruction, is an *artistic and free manner of expression*. The question here is not—and *this is the essential difference between French and Germans*—the *exposition of the form, its geometrical construction*. The straight line is quickly done away with, or is simply omitted; and all efforts are at once directed upon the object of instruction, i. e., on freehand ornament in its development. Long practice of outlines as such is very seldom seen.

As it is the aim of all French art to interest, to grasp the moment in its focus, and to please the eye by a wealth of variety, it is not strange that we should find this national trait distinctly expressed even in the first aids for teaching. It must undoubtedly be beneficial in many respects, if, during the earlier years of childhood, the imagination is fed upon forms which have been taken directly from life, and if the drawing-book answers first of all the purposes of an instructive picture-book, while at the same time it offers an opportunity for the ready imitation of the forms. To awaken and to retain the interest for the beautiful at a time when the activity of the mind still unfolds itself more or less unconsciously, is certainly a piece of pedagogical legerdemain; but success may surely be counted upon if the material selected for instruction is made to conform closely to the instinctive elements in human nature. Drawing, the same as any other subject, demands a certain maturity of mind for each of its stages. *Learning to see*, however, which is the principal discipline in drawing can only be attained by means of highly developed and adequate object-teaching.

VARIOUS FRENCH MODELS AND COPIES FOR TEACHING DRAWING DESCRIBED.

Of later publications for the first stage of instruction in form, we must confine ourselves to those issued by the more prominent among the active Parisian publishers. "L'Écolier Parisien, simples Modèles de Dessin avec Esquisse" (Monrocq), offers, in small books, a collection of the more simple forms in the various branches of drawing, and, according to the motto upon the titlepage, aims at instructing the hand in drawing lines, and educating the eye for form. The figures are executed in vigorous outlines, and are repeated at the side towards the right, in fine lines, which at first are simply to be gone over; later on, the pupil copies more independently. The low price (ten centimes each) at which these books (sixty thus far) are sold, is astonishing.

"Le Dessin pour Tous (Méthode Cassagne)" is similarly arranged, but in addition the books are furnished with a short explanatory text. The whole work, indeed, far exceeds the executive ability of the children for whom it is designed (this may be remarked more especially of the "Études du Genre"), but its purpose is to train the eye, rather than the hand, in the matter of form, and principally to acquaint this organ with the most important and the most beautiful in art and in nature. Besides this, the firm of Monrocq Frères, which is exceedingly active in the field of instruction in form and in drawing, publishes a journal, "Le Petit Artiste" (1st and 15th of each month), in which motives from all departments of drawing, with a short text, are presented in the greatest variety. Whoever turns over the leaves of the volumes thus far published will be forced to acknowledge, that the choice, as well as the execution of the objects, which is sometimes quite artistic, are well fitted to create an interest, and to be practically useful in teaching the knowledge of form. Luzanne's slate-copies are likewise a very recommendable means to interest children in the imitation of forms. The drawings are executed in red lines on the left half of the slate, and are reflected, by means of a glass plate placed vertically, upon the other blank half, where the outlines are gone over by the hand of the pupil. The "Cahiers d'Enseignement Pratique du Dessin," by J. Carot, the "Cahiers Esquisses de Dessin d'Ornement," by A. le Béalle, as well as the works of J. Bardin, L. Grunlot, Blery, &c., are already devoted to higher aims in drawing-instruction proper; and it needs only to remark in general, that the plastic ornament prevails everywhere. The natural flower gradually steps into the background. Landscape likewise is very properly excluded from elementary instruction; and, indeed, since Calame's incomparable lithographs, nothing prominent in this *genre* has appeared. Strange to say, very little has yet been done for elementary figure-drawing. It is evident, that art-instruction in France is bent especially upon the practical, upon industry, in which department truly magnificent works have been published, and in which the Parisian publishers, in spite of the efforts of the English, still stand unsurpassed. The space at command would have to be exceeded, if only the most prominent were to be mentioned. These works have been given to all the world; and it must be sufficient here to have drawn attention to them.

For instruction in linear drawing, numerous works were also exhibited, all of which, however, moved in the same track, i. e., after the general part, aimed immediately at practical application. Here, again, the most prominent work was the excellent "Cours de Dessin Géométrique et Industriel," by the Frère Victoris, which was already favorably known from the Exhibition of 1867. With it there were also exhibited the models (of plaster and of tin) belonging to it. Mention must also be made of the "Dessin Linéaire Industriel appliqué à la Mécanique et à la Construction," by M. S. Petit. Of geometrical models there are still to be noted the practically arranged collections of Rives, Delagrave, A. Julien, and others. They offered nothing new, however. Hachette & Co. exhibited wooden models for descriptive geometry and stone constructions, and small models of machinery. The "École Professionnelle" at Evreux had sent a variety of models for locksmiths, joiners, machinists, &c.

Having given a general idea of the tendencies to be observed in the copies, &c., lately published, we will now turn to the schools, i. e., to drawing-instruction itself, and, in reviewing the drawings by the pupils, we will likewise consider the methods, arrangements, aims, &c.

CONDITION OF POPULAR EDUCATION IN FRANCE, IN 1873.

It is well known that educational matters in France, even to-day, leave much to be desired, and that, in spite of the efforts of the government, the communes, and of humanitarian societies, they are still in a very defective state. Compulsion has not been carried through; and thus it happens, that even in the metropolis, in Paris, it is a rarity if children of the poorer classes attend the elementary schools for a

longer period than three years. According to the figures given in a report of the Chamber of Commerce of Paris in 1867, twenty-five thousand children still of the school-age were at that time drawn away from school by the Parisian manufactories and other establishments. But this number has increased considerably since.*

That drawing does not play a prominent part in the People's Schools, will therefore be readily understood. Still the subject is cultivated in many institutions (as an elective study), and in Paris especially a teacher of drawing is employed for the Municipal Schools of each *arrondissement*.

In the Elementary Schools under the charge of the "Christian Brethren," drawing is cultivated incomparably better and more systematically. Although the method here is likewise left to the choice of the individual teacher, a certain system, more or less successfully carried through, has nevertheless been generally introduced through the copies published by the congregation itself. On the average, the children begin to draw at the age of from nine to ten years, freehand and linear drawing being treated as totally separate branches. In freehand drawing, geometrical forms are therefore omitted, and, as before stated, rhythmical ornament is immediately aimed at. The copies most in use are those already named, by Victoris and Athanase, partially also those of J. Carot. The teacher executes the drawing in hand upon the blackboard on a large scale, and explains it; each pupil (in the case of large classes every two pupils) has before him a lithographic copy of the same original, showing the drawing as it is to appear when finished. The pupils always draw with charcoal upon paper lightly tinted, and correct the forms, by wiping with tinder or cloth, until they appear correctly; this is succeeded by the execution in crayon or in lead-pencil. The drawings executed in this manner, and exhibited at the World's Fair, frequently showed results that were quite astonishing; and those of the "École de St. Sulpice" (Paris), and "St. Michel" (Havre), must be mentioned more particularly. As shaded, plastic ornament is practiced from flat copies in these schools, the transition from the flat to the round is much easier there than from the outline-ornaments universally introduced with us.

In the numerous Boarding-Schools connected with the elementary educational institutions in France, which, especially in the provincial towns, are frequently in charge of the "Brethren," and in which there are often found pupils fourteen to sixteen years of age, drawing from the round (casts) is practiced with the best success. The models of ornaments are taken almost exclusively from the Renaissance, those for the figure from the antique.

The portfolios exhibited in large masses by the various educational institutions of the provinces unfortunately gave evidence in but few cases of a systematic course of instruction. Most of the specimens sent were selected show-pieces done by the more talented scholars, some of which, indeed, claimed our admiration, but were little in accordance with the purposes of the Exhibition. This much only became evident from all that was to be seen: that each teacher cultivates his own *genre*, according to his especial liking, and that no uniform principle has as yet been carried through in general. As a rule, instruction in drawing in the institutions named culminates simply in brilliant execution, and, having no positive aims, frequently degenerates into shallow dilettanteism.

It may be gathered from what has been said so far, that much is still left to be desired in instruction in drawing in the French schools for general education, and that, above all, a common centre is still wanting, proceeding from which well-defined principles might be enforced. No one, however, will doubt that it is very difficult to introduce reforms in a state in which educational matters are still in so many different hands, and are, indeed, in great part left to private enterprise. The efforts made in this direction by the government since 1870 deserve full recognition; and the future of France may be congratulated, if all that is now prescribed by law can be carried out. The French have generally introduced their innovations according to the measure of their wants; and the year 1870, therefore, brought to their educational institutions, what the World's Fairs brought to their industry, i. e., a reform. They demonstrated plainly at the exhibition in the Prater, that they are capable of holding their own against all other states in the new direction which taste has taken. For this they possess inherited advantages. But it is still a question of the future as to how far the reforms in matters of education can be accomplished.

The luxury of the upper classes in France during and after the epoch of the Baroque style kept French industry in a flourishing condition, and aided its diffusion all over the world. Lucrative occupation called forth numerous industrial

*According to a report of the "Société pour l'Instruction Elementaire," of the year 1870, there are two millions of children in France who receive no instruction whatever, and fourteen millions of adults who can neither read nor write.

schools in which the French artisan gained that technical routine which marks French industry even to-day. Everything done for art-industrial drawing by the government, by the communes, or by individual manufacturers, was done, as already remarked, not so much for the purpose of purifying taste, as with a view to increasing wealth, and keeping business in a flourishing condition. All the world, indeed, believed to be beautiful, and admired, whatever came from France. Thus, although it is left to other nations to lead form back to law from caprice, France still has the advantage of a legion of technically well-trained workmen, made over to her by her past, who can be used to good purpose in the reform of her art-industry, while in other countries such workmen will first have to be educated.

ATTENTION GIVEN TO DRAWING BY SCHOOLS OF PARIS.

The special Industrial Schools arose in obedience to local wants, and, in the provinces, are mostly of a purely local character; in Paris the larger schools are so organized as to serve more general interests. Besides the higher Art-Schools, the city at present has forty Public Drawing-Schools, which are sustained partly by the commune, partly by the government, or by private individuals. All the Municipal Schools, furthermore, have evening classes, in which apprentices and adults are taught free of charge. The greater number of these evening-classes were opened as late as 1864; and the attendance in the year 1869 had risen from twelve hundred to four thousand; after the war it decreased again to two thousand. The attention which the commune of Paris has lately bestowed upon the Industrial Improvement Schools is best shown by the increase in the amount expended upon them, which, from thirty thousand francs shortly after the year 1850, has now reached the sum of three hundred and fifty thousand francs.*

**What Paris does for Art.*—The following interesting remarks are taken from an article by R. v. Eitelberger on "The Cultivation of Art by the State," contained in C. v. Lützow's "Art and Art-Industry at the Vienna World's Fair, 1873," Leipsic, 1875, p. 268, &c.

"We have before us the 'Liste des Objets exposés par la Ville de Paris' (Exposition universelle de Vienne, 1873. Paris, 1873, 143 pp.). What were the objects principally exhibited by the city of Paris? They were objects of art.

"Under the heading 'Service des Travaux d'Architecture,' we find the Palace of Justice by J. L. Duc, the Chamber of Commerce by Bailly, the Church of St. Ambrosius by Ballu, the Church of St. Augustine by Baltard, the Church of St. Bernard by Magne, the Church of St. Francis Xavier by Lussou, &c., several communal and school buildings, the fountain of the 'Théâtre français,' that of St. Michel and Luxembourg by Davioud, and so on. The most interesting objects are the projects for the restoration of the 'Hôtel de Ville,' especially those by Ballu and Deperthes, which received the first prize. It will be seen that the city of Paris employs independent architects in the erection of its buildings.

"This section is followed by the 'Service des Beaux Arts,' consisting of *Peinture* (paintings, designs, water-colors, photographs, painted windows), *Sculpture*, *Gravure* (medals, copperplate engravings), and *Tapisseries*. The catalogue of the 'Service des Beaux Arts' takes up fifty-four pages, and is well worthy of detailed inspection.

"Among the historical painters who have been employed by the city of Paris, there are to be found artists of all tendencies: Barrias, Delacroix, both the Flandrins, Blaize, Hesse, Jobbe Duval, Lehmann, Lenepveu, Robert-Fleury, Signol, Yvon, and others.

"Most of the oil, fresco, and glass paintings were executed for the churches of the city of Paris, the lesser number only having been executed for other public buildings; the same is true of the sculptures. In this department artists of various tendencies are also met with: Carrier-Belleuse, Duret, Frémiét, Guillaume, Maillet, &c. The old custom of coining medals in memory of important events has been kept up by the city of Paris.

"Among the copperplate prints there are specimens, executed in line-manner, from paintings which belong to the city of Paris. In short, this exhibition of the city of Paris was a hint to all those who desire to know why art flourishes so vigorously in France. It is not only because the art-schools of France are better organized, and are managed in accordance with higher principles, than elsewhere, but it is also because the arts are provided for in the budget of the commune."

Fortunately for America, we are not encumbered with a state church, so that the religious branch of art is out of the question with us. But would not the bare white walls of the halls of our public schools, of the council chambers of our city councils, or of our legislative halls, offer a splendid field for the exercise of the powers of a coming race of American historical painters?—*Transl.*

The best of the drawing-schools at present to be found in Paris were mostly established some time ago by capable artists, and at a later date were subventioned by the commune. Of these, the schools of E. Levasseur and Just. Lequien are still the most prominent. At the Exhibition, the works of their pupils were incorporated into the "Exposition de la Ville de Paris," where the admirable model of the Lequien School was likewise to be seen. It showed the grand drawing and modelling hall, which is used in common, with all its arrangements, down to the smallest detail; adjoining this on both sides, the halls for scientific lectures; the hall for the living model (human figure); the collection of models; the office, &c. This school received a premium at the last Paris Exhibition, for its exceedingly practical arrangement; and in Vienna it was likewise highly applauded by specialists.

In Lequien's school, as well as in most of the municipal schools of Paris, all branches of freehand and linear drawing are taught, and its exhibition made an imposing impression by the artistic perfection, as well as by the variety of its work. In the choice of the motives of ornamentation in these higher schools, the traditional, indeed, has not yet been fully done away with.* The Rococo still disports itself in tolerably extravagant variations, and has been preserved, especially in Levasseur's school; but, alongside of it, the Renaissance has already appeared upon the field with tolerable decision, and, with the examples of classical architecture, the ornamental motives of the latter are likewise coming into use. Figure-drawing adheres much more closely to the antique. The French, in fact, have never degenerated as much in the figure as in ornament, and their preference for antique forms, especially in sculpture, is characteristic. The execution in drawing, although picturesque throughout, never neglects modulation, and the effort at complete deception is always apparent. The feeling for light and shade is educated to a much higher degree in the French schools than in the German, in which latter the main stress is laid upon the elaboration of the form, and the truly picturesque effect is slighted. The German drawings from casts have a plastic look; but the shadows are mostly untrue in tint, and black to exaggeration. Even in the choice of the tint of their paper, the French show a finer feeling; and it never happens that drawings are made upon paper, the local tint of which does not correspond to the tint of the object.

SHOWING MADE OF THE WORK OF PUPILS IN PARISIAN ART SCHOOLS.

The academical studies evince precise, individual conception, coupled with a good understanding of the anatomy. The practice of *sketching* from the living model, carried on in the school of Lequien (*figs*), is very praiseworthy. The position of the model is changed at the end of two hours, and the scholars are held to study and represent nature as fully as possible during the time allowed; certainly a much more practical way of studying it than by means of the minute finish given to the objects according to the method still so often the fashion in German art-schools.

It must not remain unnoticed here, that the new drawing-copies, spoken of above, are in general use in the municipal drawing-schools, with the best of success, and that Julien has been driven from the field.

In architectural drawing there were exhibited, of classical subjects, Greek columns and temples, but surprisingly little of Italian Renaissance. Most of the drawings of façades are taken from the epoch of French pomp, or adhere to the insipid productions of modern times. Constructive drawing proper, on the contrary, flourishes in all its branches, and especially in the department of machinery.

Specimens of modelling were exhibited only by the schools of Lequien and Levasseur,—reliefs, with figures from nature and from the antique, showing throughout a picturesque treatment; also Renaissance ornaments, busts, &c. Many of the original compositions still showed the Baroque style. Levasseur's school also submitted plants modelled from nature, in plaster and in wax.

Good drawings were also to be seen from the "École de Dessin du Rue St. Bernard, 20," the "École du Rue d'Aligre," and the "École d'Avenue d'Italie." Among the female municipal drawing-schools, the one under the direction of Madame Levasseur made a brilliant exhibition, especially of flower-studies, and also of very good figures and ornaments. The schools of the fifth and sixteenth *arrondissements* ranked next.

* The designers working for art-industrial purposes are in the same state of vacillation. Their works were exhibited in the transept of the French division. V. Dumont, Prignot, J. Dubuisson, are all of them still flirting with the style of the time of Louis XV. Edan already employs purer and more compact forms. J. Gonelle and Charles François remain unsurpassed in their designs for shawls.

The "École de Dessin" of the "Manufacture Nationale des Gobelins" exhibited very interesting drawings and studies for gobelins. This school is managed most excellently by Professors Lucas and Maillard; and the figure, together with the study of flowers, is especially cultivated in it.

Of the "École Spéciale d'Architecture" (established 1863) there were to be seen original works, and photographs from such. The school is well known by its admirable productions. A large number of architectural works were published by it, of which the "Fragments d'Architecture" (Paris, Morel) must be mentioned as the most prominent.

Excellent specimens had furthermore been sent by the provincial cities from the renowned "Écoles professionnelles" of Rouen, St. Quentin, Havre, Lyons (la martinière), and the "École Industrielle de la Ville de Lille." There were also numerous portfolios, with good drawings from Normandy and the Bretagne, where the greater number of the "Écoles manufacturales" are to be found. In the South, Toulouse and Bordeaux still continue to be the central points of art-instruction, and their schools are the patterns for those of the smaller cities. The schools of Bordeaux are more inclined towards the industrial; while in Toulouse, under the direction of M. Gaillard, the academical and purely artistic prevails.

ABUNDANT OPPORTUNITIES FOR ARTISTIC TRAINING OF WORKMEN PROVIDED IN FRANCE.

Opportunity is everywhere given to the workman in France, and perhaps more especially so in Paris, to acquire an artistic education; and the government has at no time neglected to see to it, that the advantages offered should be made use of to their full extent. Hausmann, under Napoleon, had, indeed, done a good deal in this direction; but a good deal remained still to be done, when the calamitous catastrophe of war produced a marked change in the course of all things in France. The present ministry, however, took up the question more energetically than before, and its efforts are especially directed towards advancing the education of the working-classes. People are well convinced that it is chiefly industry which must bring the lost milliards back to the country; while at the same time, in view of the advances made by other nations, to stand still would be equal to retrogression. But however the special schools of Paris may flourish, and however large a number of artistically-trained working-men they may supply to the industries, it is nevertheless true, that with the mass of the laboring classes, and especially with the apprentices,—the young aftergrowth as it were,—general as well as special education is still exceedingly deficient. In view of these circumstances, M. Gréard, at present Inspector-General of Public Instruction, last year addressed a detailed report on the "Écoles d'Apprentis" to the Prefect of the Seine, in which he made certain propositions calculated to remedy the existing defects. This very interesting document shows that its author has studied the question most thoroughly in its relation to France, and that, by a fearless exposure of existing evils, he hopes to open the way to better results. Not without justice does the author remark, in describing the slave-like uses made of the apprentices on the part of the masters, "The tree is cut down to gather the fruit," and "The fruit is destroyed in the flower." The sad truth of these words has indeed been experienced elsewhere than in France, especially in Vienna; and efforts are now making everywhere to check this evil. Severe measures, however, cannot be carried through by the government, as these would conflict with the liberty of trade. The enactments that are made can therefore aim only at the welfare of the future, without bringing immediate gain to the present.

After giving a detailed description of the existing schools for persons engaged in industrial pursuits, such as the "Pensionats" and "Externats d'apprentis," the "Écoles professionnelles," "Écoles industrielles," &c., as regards their organization as well as their results, the author of the document in question passes on to a full review of the question of prizes and competitions, their advantages or disadvantages to instruction.

In the year 1847, the municipal administration established premiums for the pupils, with the intention of increasing the interest in the schools. It soon became evident, however, that it was difficult, in view of the unequal preparation of the pupils, to reward talent as well as industry; and therefore, instead of the prizes, scholarships were created (1854). But, unfortunately, the speculation of the masters again induced them to enact a most injudicious part; and thus the advantages to the community remained problematic. Numerous evening classes were then opened (1864), so as to provide increased facilities for the advancement of the education of artisans; and by these evening classes the number of public drawing-

schools was carried up to thirty-three.* Competitions with prizes were established, which occurred every two years on the occasion of the exhibitions of the "Union de Beaux Arts;" besides which the commune put a number of medals, proportioned to the number of scholars, at the disposal of the directors of the drawing-schools, which were distributed by the teachers among the most industrious pupils. For the purpose of animating the adults (assistants, journeymen, &c.), and of keeping up their interest in their own education, yearly competitions, with prizes, were likewise established for them.†

The special schools existing in France are also reviewed very thoroughly by M. Gréard. He endeavors, by examples, to give an insight into the condition of general and special instruction in the various institutions; and, taking as a basis the systems upon which the schools now existing at Creuzot, Nantes, Havre, and Paris are organized, he sketches the programme for a model school, which appears to be in harmony with the demands of the times and the necessities of Paris. In conclusion, the author recommends that the government establish such a school in Paris immediately, this school to serve as a model for all those to be organized in future; that the people be requested by the government to cause the apprentices to frequent the schools provided for them; that the government subvention the industrial schools supported by associations, and that it employ all possible means for the development of whatever else of drawing-schools there may be in existence. The leading authorities have carried out these wishes to the fullest extent, and, by a series of enactments, have given evidence that, even in the midst of the worst political struggles, they have not lost sight of art-industrial education, but that, on the contrary, they seek to restore the prosperity of the country by its means.

As a "Règlement Général sur l'Enseignement du Dessin dans les Écoles Primaires et dans les Classes d'Apprentis ou d'Adultes de la Ville de Paris," the enactments of the year 1865 (by Duruy and C. E. Hausmann) are still in force.

EXAMINATION FOR TEACHERS OF DRAWING IN FRENCH MUNICIPAL SCHOOLS.

The examination which the drawing-teachers of the "Écoles Municipales" must undergo before the commission especially appointed for the purpose embraces the following subjects: For free-hand drawing: 1, The execution of a drawing from a plaster ornament; 2, A drawing from an antique statue; 3, A thoroughly finished drawing of the human figure from nature; 4, An original composition of an ornament with figures (the candidate may draw or model, according to his preference); 5, Correction of an ornament and of a figure drawn by a pupil; the correction to be made before the commission by the candidate, who is held at the same time to accompany the correction by explanations given in a loud voice (*en expliquant à haute voix*).

For linear drawing the candidate must execute: 1, An architectural theme according to a given programme, and, 2, A problem of descriptive geometry; furthermore, 3, He must pass through a verbal examination on the éléments of mathematics, geometry, descriptive geometry, perspective, architecture, and mechanics.

As superintendents of drawing, two inspectors were nominated (for the department of the Seine), according to the organization of the year 1865 (Article II.), whose duty it is to report to a commission on the activity of the teachers, and to see to the conservation of the schools. The commission just mentioned consists of fifteen members, five of whom are renewed every year. It examines the candidates, proposes the models (originals) for drawing-instruction, and decides on regulations, methods, programmes, &c., for drawing in the different schools. The duties of the inspectors were more clearly defined in the year 1870, in four articles by the prefect, M. Henri Chevreau; and a circular by the present "Directeur de l'Enseignement" Gréard still further emphasizes that each school in the department must be inspected at least twice a year, and that a detailed report must be made to the prefect.

* In 1851 there were only six.

† The regulations still in force are as follows: Of each twenty-five scholars, three, who have been selected by their professor according to their progress, are permitted to take part in the competition. The pupils of the different schools meet at a place designated by the administration, and are required to execute two drawings under surveillance: first, a copy of an ornament from the flat; and secondly, a copy of an ornament from a cast. Three prizes and six honorable mentions are given yearly. Each medal is accompanied by a diploma signed by the prefect.

VALUE OF GOVERNMENTAL ENCOURAGEMENT OF ART AS SHOWN IN FRANCE.

The attention which is devoted to drawing in France, and the readiness with which sacrifices are made for it, have no doubt been inspired by industry, and industry has repaid the outlay with bountiful interest. It needed only a stroll through the art-hall, however, to make it apparent that art itself, which has always been at the service of the manufactures to a much greater extent in France than in Germany, is likewise recognized by the government as an important factor of industry. Nearly two-thirds of the 1,024 French paintings and sculptures were marked in the catalogue: "Belonging to the state" ("Appartient à l'État"). The millions expended upon them are abundantly returned to the coffers of the state through other channels;* and this policy of France in respect to art can only be recommended to other states. Let the laurel decorate not only the sword, but also the lyre of a nation, and let us remember the lesson, already demonstrated to us by antiquity, that art, if it is to flourish, must be fostered by the government. But, at the same time, let no nation neglect to educate its people to the comprehension of art—a problem which in France, quite as much as with ourselves, is still awaiting its solution.

ITALY.

There are few branches of art-industry whose origin and first development must not be sought upon Italian soil. The revolution which took place in art in this country during the Cinque-Cento acted also upon the art-industries. While in art the human figure suddenly awoke to life, in art-industry the ornament freed itself from its rigid architectural framework, shot forth in an abundance of animated forms, and developed such a wealth and variety of motives, that, even after the pause which was brought about by the Baroque period, it was still capable of becoming the never-failing source of modern industry. The Italian Industrial Exhibition plainly showed how the development of form in art-industry can be influenced by good examples.

The Italy of to-day may, indeed, be likened to a museum containing the monuments of all those branches of art whose triumphs were achieved upon its soil a few hundred years ago. With these splendors continually before its eyes, it is impossible for Italian industry to leave its noble old traditions. It continues to build in the same direction, uses the motives already in existence, and transplants them, as the gardener transplants his flowers, into the most varied compositions for the decoration of its objects, and in this manner is finally led to original invention in the spirit of the ancients themselves.

ITALIANS INHERIT FACILITY IN ART TECHNIQUE.

But, together with the forms of the Renaissance, its various technical processes have also been inherited; and Italy is therefore still unsurpassed in certain departments of art even to-day. The spirit of the Renaissance has been handed down undimmed in the ornament as applied in the industries; but in the figure, that form which of all forms is the most truly artistic, it has descended from sublime solemnity to the naïve and the profane. It made a painful impression upon the lover of art to see so much brilliant technical execution, in the Italian sculptures, wasted upon so much that was unmeaning. It would lead us too far, were we to enter upon the principal branches of Italian art-industry as regards forms and technical management. The skill of the Italians in glass and in marble, in faïences, bronzes, and above all in wood-carvings, is an inheritance of the classical period of the fifteenth and sixteenth centuries. The traditional education in the matter of form, by means of the schools, is closely connected with these various branches of industry. It is remarkable, for instance, that in the ornamentation of textile fabrics, which has for some time been ignored in the schools, the traditions of the Renaissance have died out almost entirely, and foreign (French) elements have found entrance to a greater extent than in other departments,—a proof of the connection which exists between art-instruction and the modification of form in industry. It was commerce, undoubtedly, which prescribed the models for the schools in Italy; and the artists trained in the spirit of the Renaissance made the forms of the Renaissance traditional; but, when the artists followed the fashion in regard to French flowers in the designs for textile fabrics, the schools took no notice

* The statistics of commerce showed thirteen hundred millions of francs in 1851, and four thousand millions in 1869, of which nearly one-half is made up by articles of luxury.

of the fact. Now, if the designers in this branch had also been trained in the classical forms by the schools, these forms would certainly have maintained the field.

In the industrial districts of Italy drawing is indeed more than a desideratum, and therefore finds the most careful cultivation. The "scuola tecnica" very generally has also the character of a technical school in which technical aims take the precedence of the elements of general education. The drawings gave evidence everywhere of the practical purposes of the decorator, even in linear drawing, in which the geometrical ornament (mosaic floors, &c.) always played an important part. The Exhibition had been abundantly supplied with drawings by the pupils. All the provinces of the country, far-off Sicily not excepted, were represented by portfolios; and, in view of the mass of interesting material, it was only to be regretted that no systematic arrangement had been made, either geographically, or according to the categories of the schools, and that the government had neglected to delegate a specialist to the Exhibition who might have supplied further information. The representation of the course of instruction had only been partially kept in view; generally speaking, mere exhibition pieces had been sent, i. e., the best productions of the scholars.

It will be seen from the remarks made in the preceding paragraphs, that exertions are not lacking in Italy to keep alive the traditions of its rich art-industry, and to train new agents for its service. The fact, that the forms employed do not go beyond this tradition, and that very little progress has consequently been made for years, is mainly owing to the schools, which content themselves with imitating old examples, and neglect to introduce new elements from the universal fountain-head of all art,—from nature. Even the absence of figure-drawing is sufficient to act as a check upon the free development of the ornament; and this subject will have to receive attention above every thing else, if the people are to be educated to a higher comprehension of art. The Italian industries of to-day, unlike those of the Cinque-Cento, have no great art at their side, from which they might receive a further impulse. They plod along the old roads in solitude, and are content with preserving the intellectual elements bequeathed to them by former times.

To be sure, the time during which reformatory movements in art-industry have been made consciously has been but short as yet, and the monumental world of Italy is far from being exhausted. But it seems as if a freer intellectual movement in the spirit of progress ought to take place earlier than anywhere else in that country in which the noblest forms have their home.

Looking over the publications issued throughout the world for purposes of art-instruction during the last twenty years, we shall find that certainly two-thirds of their contents are taken from the monuments of Italy. England, France, Germany, and Austria have drawn upon the treasures of this country for the education of their own art, and have employed them as means for the improvement of taste.

So far the political condition of Italy has undoubtedly been the principal cause why the materials to be found in the country have not been turned to advantage more independently. Now that the unity has been attained which was so long striven for, a more satisfactory activity may also be expected in the direction of art. The later publications for instruction in drawing and in art consist mainly of photographs, which, as is well known, have been brought to the highest state of perfection in Italy, especially for the reproduction of paintings, &c. Besides large copies of the paintings of the classical masters, we must not forget to mention the highly interesting and superior publication of the drawings in the Pinakotheka of Venice, by A. Sрни. The old city of the Tiber, with its surroundings, appeared bodily at the exhibition in the splendid pictures (by Fratelli Rosa) published under the title, "Sulle Scoperte Archeologiche nelle Città e Provincia di Roma negli Anni 1871-1872."

Of lithographic works we may finally mention "Racolta di Ornamenti," from terra-cottas at Siena (fifteenth and sixteenth centuries) by S. Rotellini and G. Brenci (Siena, 1873), consisting of charming Renaissance motives composed for the most varied spaces; and "Mosaici Christiani e Saggi Pavimenti della Chiese di Roma" (fifteenth century), by G. B. di Rossi, beautifully executed in chromolithography.

ENGLAND.

Prominent mention has before been made of the fact that England, after the first London World's Fair of 1851, preceded all the other states of Europe in endeavoring to reform the taste then prevalent in art-industry, and thereby to elevate the standard of her own industrial products. As a central point for this undertaking, the South Kensington Museum, with the Art-School attached to it, was established, and a special administrative Science and Art Department was created. "Schools of Art" were also established in all the more important industrial cities

of the country (above one hundred so far), in which instruction is given in drawing, painting, and modelling, according to the necessities of the several localities. All the examples used by these schools issue from their centre,—the rich collection of the institution just named, which also exercises its influence upon art-instruction in various other ways. Besides the art-schools, there are also numerous evening classes for those engaged in industrial pursuits, all of which have the same object.*

Two decades have passed by since this movement commenced in England; and the revolution in English industry, in relation to refinement of style, has been followed with great interest at all the World's Fairs. England's participation at the Vienna Exhibition was likewise looked forward to with great expectations; and it was hoped that an interesting picture, especially in regard to art-industrial instruction, would here be shown. But these hopes were disappointed. England concentrated her attention upon the representation of her colonies; she unfolded her Asiatic riches, while her native industry was represented very incompletely, and her educational system very inefficiently. Nothing was to be seen but some specimens by the pupils of the Kensington School, and a few of the publications of this institution. It certainly seemed strange that the country from which the idea of World's Fairs had first emanated should so ignore the important chapter of art-education, to which it owes its present position in industry as compared to other states.

Everybody perceives that the influence of the English art-schools in the matter of form within the last twenty years has been of the greatest importance. Still the aims originally proposed are far from having been reached; and it will not yet do for the schools to rest upon their laurels, although the success of art-instruction may already be traced in English art-industry. Taste has refined itself decidedly, and the forms of industrial products in general are more artistic, and of a better style. But they are still far from moving in a uniform track; on the contrary, they diverge into all styles and all directions. It would appear that an independent position has been taken by English art in the ornamentation of flat surfaces only. In this department, there is observable a unity of forms of a decidedly modern style. The same may also be said of furniture, into which polychrome surface-ornamentation has been introduced. But in silverware, bronzes, faïences, and majolicas, the whole history of art is illustrated, from ancient India down to the epoch of the Baroque style. No doubt the historical *technique* in these latter branches of industry very generally demands also the historical style, since, as a rule, more attention is paid to the demands of *connoisseurs* than to an artistic taste. In the future the principal task of the scientific direction of art-instruction in England will probably be to check this dispersion among all the various styles, and to lead from imitation to original creation. It is, however, still a question of time, whether England will ever be able to attain to the position of recognized leadership in art and art-industry, as far as the *technique* is concerned.† In this the French and the Germans of to-day are far in the advance; and it need not astonish us when we find that the most beautiful productions of the firm "Minton," for example, owe their origin to French and to German artists. The English nation is indeed an art-loving, but on the whole not an artistic nation, as any unprejudiced observer might again have noticed in the Art-Hall. And it will always remain problematic whether art-industry can of itself attain to the highest degree of development in a country in which art proper does not occupy a leading position.

In spite of all successes, the matter of form in England is still in a state of fermentation; and it will only be possible at some later period, when the process of clarification shall have been completed, to arrive at a judgment of the value of the art-educational apparatus, which has been put in motion with such good intentions.

PUPIL'S WORK OF SOUTH KENSINGTON ANALYSED.

If we now take a look at the exhibition of the Kensington School, we shall find neat productions of good style in all branches of art-industry, revealing throughout the effort to attain to a uniform principle in harmony with the spirit of the reform. The results could not be called brilliant; on the whole, they left one cool. The authorities of the Museum had arranged a table of the class-divisions of the institu-

*The organization of the museums and of art-instruction in England has been treated in detail in the Austrian reports on the World's Fairs of 1862 and 1867. A more comprehensive review of the situation is given by Dr. Hermann Schwabe: "Die Förderung der Kunstindustrie in England, &c." Berlin, 1866.

†The above sentence has been left as it stands in the original, although the word "technique" appears to have crept in by a mistake. The context makes it evident that the "artistic spirit" is alluded to.—*Transl.*

tion, and had endeavored as much as possible to exhibit something of each branch. But this had a tendency to cut up the picture of the activity of the school, as two or three specimens of a special division were not sufficient to give an idea of its character. The authorities had also neglected to provide the programmes of the institution since 1867, which might have helped to supplement the fragmentary nature of the Exhibition. The course of instruction in the preparatory classes could be traced only with difficulty. Of the work of these classes there were to be seen ornaments from casts in outline; others shaded in sepia, and geometrical models executed in crayon. By the higher (special) classes there were exhibited copies of original models in various styles, studies from nature, and original compositions; the best among these were sketches for the ornamentation of flat surfaces, paper-hangings, textile fabrics, &c. The flower is carefully studied, and is applied to ornament in a very excellent manner; only here and there, especially in the designs for fans, did its application recall French taste. The composition of the ornament is always made with reference to the finished object, and its purpose is invariably kept in view.

Figure-drawing played a more subordinate part among the specimens exhibited. Although some of the antique statues left nothing to be desired in careful execution, the anatomical studies (from the Discobolus) were sufficient to expose its weakness.

Of studies from nature (academical drawings), only a few were shown.

Of sculptures there were to be found only some ornaments, and reliefs with figures, of no special importance. The best of them was a relief of the (anatomical) Discobolus, in which the forms were correctly and truthfully given.

Of linear drawings there were submitted studies in projection and perspective, a few machine-drawings, and pretty architectural drawings, among which interior decorations of good style deserve prominent mention. A restoration of the Lysikrates monument at Athens, following Hansen's plan with but unimportant deviations, merits a notice for its neat, painstaking execution.

But the most important specimens exhibited by the institution consisted of the etchings executed by the scholars from objects in the museum, for the purpose of dissemination. This exceedingly rich collection embraced plates of great beauty. The chromolithographs from originals in the museum, published by the institution, are also worthy of all praise. The decorative drawings, "The Twelve Months" and "The Four Seasons," composed by E. F. Poynter, A. R. A., an artist of great talent, for the Kensington Museum (as "decorative designs for the Grill Room"), must likewise be mentioned.

PUPILS' WORK SHOWN BY ART SCHOOLS OF INDIA.

It has before been observed that the foreign possessions of England were represented on a very comprehensive scale. Among them India, with its industry and its treasures of art, stood in the first rank. The exposition of the School of Art at Bombay, consisting of models and drawings by the pupils, as well as of photographs from such, was very interesting. The tendency of this school, in regard to style, is quite peculiar. Flowers are used as subjects of study in modelling and in drawing, while old Hindoo forms and the forms of the European Renaissance are employed in ornamentation. The compositions resulting from these three different elements exhibited but little unity, and were generally overlaid. The best among them were perhaps those in which the old native forms had been imitated. The attempts at artistic figure-painting did not rise perceptibly above the ordinary productions of amateurs.*

* *The English Art-Educational Institutions* are very highly spoken of in the Reports on the Exposition of 1867, which Prof. Langl alludes to on p. 119.

Dr. A. Kornhuber, Professor at the Polytechnic Institute at Vienna, and member of the International Jury at Paris, 1867 (Class 90), says, in his "Report on Intermediate and Industrial Instruction" (Austrian Report on the Exposition, vol. vi. part xi. pp. 272, 273):—

"It is only since 1835 that the English Government has taken any part in education by extending its support to the People's Schools; and in 1853 it created a special administrative 'Science and Art Department.' Branch-schools all over the country are connected with this department, among them ninety-two 'Schools of Art,' which in 1865 were attended by 16,621 pupils, and in which instruction is given in drawing, painting, modelling, and in composing original designs for manufacturing and decorative purposes, the instruction being intended more especially for the benefit of the industrial classes. The Schools of Art also extend their instruction to the Elementary Schools, and 89,267 children partook of it in the year named. Night-classes have also been opened for those who are engaged in industrial pur-

LOCATION OF, AND ATTENDANCE ON, ENGLISH ART SCHOOLS.

	Popula- tion.	Stu- dents.		Popula- tion.	Stu- dents.
Aberdeen.....	88,125	198	Leicester.....	95,084	201
Andover.....	5,501	81	Leith.....	42,000	58
Bath.....	52,528	191	Lewes.....	10,735	79
Belfast.....	174,394	430	Limerick.....	39,828	122
Birkenhead.....	65,980	192	Lincoln.....	27,000	204
Birmingham.....	343,696	1,126	Liverpool.....	473,346	.....
Boston.....	15,576	95	In North District.....	.....	680
Bradford.....	145,827	169	In South District.....	.....	615
Bradford High School.....	.....	140	Macclesfield.....	35,571	153
Bridport.....	7,666	94	Manchester.....	383,843	.....
Brighton.....	103,760	153	In Bond Street.....	.....	502
Bristol.....	182,524	431	At Long Millgate.....	.....	507
Bromsgrove.....	11,795	65	Metropolis (London).....	3,251,804	.....
Burslem.....	45,000	164	At Bloomsbury School.....	.....	197
Cambridge.....	30,074	152	At Lambeth.....	.....	279
Cardiff.....	70,000	217	At North London.....	.....	162
Carlisle.....	31,074	162	At Rotherhithe.....	.....	24
Carnarvon.....	9,370	205	At St. Martin's.....	.....	117
Chester.....	41,923	326	At Charter House.....	.....	131
Chester.....	35,232	377	At Spitalfields.....	.....	111
Cirencester.....	7,073	97	At West London.....	.....	494
Cloimel.....	10,508	56	At Westminster.....	.....	337
Coalbrookdale.....	15,652	88	Monmouth.....	6,000	44
Coleford.....	2,985	57	Newcastle (Staffordshire).....	15,049	64
Cork.....	81,000	204	Newcastle-on-Tyne.....	130,915	394
Coventry.....	41,647	268	Northampton.....	44,871	77
Croydon.....	70,000	199	Norwich.....	75,000	151
Darlington.....	40,812	250	Nottingham.....	86,920	498
Derby and Duffield.....	61,358	312	Oxford.....	34,514	218
Devizes.....	6,848	61	Paisley.....	48,257	105
Dorchester.....	6,915	82	Penzance.....	10,406	180
Dover.....	25,506	139	Perth.....	26,377	150
Dublin.....	245,722	.....	Portsmouth and Gosport.....	112,000	235
At Queen's Institute.....	.....	162	Preston.....	85,428	178
At Royal Dublin Society's House.....	.....	483	Reading.....	32,313	149
Dudley.....	43,765	109	Ryde.....	12,576	137
Dundee.....	120,718	414	Salisbury.....	12,711	183
Durham.....	14,888	140	Saltaire.....	4,284	130
Edinburgh.....	196,500	.....	Sheffield.....	239,947	271
At Male School.....	.....	420	Shrewsbury.....	23,300	137
At Female School.....	.....	200	Southampton.....	53,747	126
Exeter.....	40,000	241	Sterling.....	14,276	176
Farnham.....	12,000	80	Stoke-on-Trent.....	14,008	130
Frome.....	12,500	136	Stourbridge.....	24,968	167
Glasgow.....	490,000	1,354	Stroud.....	9,963	120
Gloicester.....	31,804	132	Sunderland.....	98,000	134
Halifax.....	60,000	215	Swansea.....	67,374	152
Hanley.....	40,000	214	Taunton.....	16,000	209
Hanley-on-Thames.....	5,600	29	Torquay.....	21,000	140
Hull.....	123,111	308	Trowbridge.....	11,487	60
Inverness.....	12,499	115	Truro.....	12,000	74
Ipswich.....	43,136	335	Wakefield.....	28,079	133
Keighley.....	24,704	123	Walsall.....	45,000	61
Kendal.....	13,442	84	Warminster.....	6,500	44
Kidderminster.....	20,803	134	Warrington.....	33,053	349
Kilmarnock.....	21,073	138	Winchester.....	17,000	118
Lancaster.....	17,350	341	Wolverhampton.....	74,000	179
Leamington.....	22,730	144	Worcester.....	40,000	163
Leeds.....	259,201	.....	Great Yarmouth.....	40,526	319
At Cookridge Street.....	.....	597	York.....	45,000	152
At 9 South Parade.....	.....	114			

suits during the day; and besides all this the excellent collection of the South Kensington Museum (administered by the Science and Art Department) serves as a central dépôt of examples and copies which are put to practical use all over the country, as far as possible. * * *

"The 'Schools of Art' have proved to be very useful, and have been exceedingly beneficial in their influence upon the working population of England; for the instruction given in these schools does not only make the artisans more skilful, but it also animates and enables them to improve old objects, and to discover new processes, and thus elevates their social position, while increasing the producing power of the country. The usefulness of these schools is seen above all in the manufacture of machinery, the notable progress in which is mainly owing to them. The Art School at Birmingham gave an extraordinary impetus to the production of decorative furniture, of *papier-mâché*, and to the manufacture of jewelry; the school at Dundee (with 1,922 pupils in 1865) influenced the jute-manufactories; the

AMERICA.

One of our most prominent art-scientists gave it as his opinion, at the close of the first World's Fair held in London in 1851, that the organization of art-instruction on the plan then proposed by England would be easiest of achievement, and would work to best advantage, in a country in which no old art-traditions are to be overcome, and which is in possession of the freest institutions, or, in other words, in the North-American Free States.* This sentence certainly contains a profound truth. But it may still be questioned, whether, under existing circumstances, an undertaking looking to such a result could meet with success for the present. As

school at Paisley (existing since 1848, and attended by 1,063 pupils in 1865) is of great use to the manufacture of shawls; the one at Nottingham (established 1843) has raised the manufacture of lace by the introduction of better taste in the designs; the woollen manufactures are measurably benefited, in designs as well as in dyeing, by the Art Schools at Leeds, Huddersfield, Stroud, and Trowbridge (with together nearly 8,000 pupils in 1865); the Art School at Bradford (established 1865) contributes to the improvement of taste in the manufacture of worsted goods; the Art Schools at Durham, Glasgow, Halifax, and Kidderminster exercised the most beneficial influence upon the manufacture of carpets, in design as well as in color; the cutlery of Sheffield owes its beauty of form and of execution to the Art School which has been in existence there since 1843. In a like manner the education and the improvement in the taste of the working men in other departments of industry, has been brought about by these schools, which are scattered all over the country, and are to be found in all the larger manufacturing cities and centres of industry; this is true of the progress in cotton manufactures; the improvements in the forms of glassware, especially of that for every-day use; the better design and more skilful execution of higher-class goods in porcelain, china, and earthenware; the refinement of style in English iron-wares, &c. The practice of sending art objects and standard examples from the Kensington Museum to all parts of the country, enables many working-men, to whom a journey to London would be utterly impossible, to see good models, by setting these models down before their own doors, as it were.

"The exhibition made in Class 90 by the Science and Art Department of the Kensington Museum afforded sufficient proof for the truth of the statement just made in regard to the influence of the 'Schools of Art.' Exquisite free-hand drawings from all sorts of objects, water-colors, geometrical and architectural drawings, colored photographs from art objects in the Museum (to be used as patterns and as copies), works of sculpture, statues, &c., showed the colossal progress made by England within the last ten years, in this branch of industrial instruction, which may indeed be called the most important."

The following is from the "Report on Instruction in Drawing," by Prof. R. Nientchik, of the St. L. Technical High School at Gratz (Austrian Report of 1867, vol. vi. part xi. pp. 308, 309):—

"A cursory glance at the drawings exhibited by the Science and Art Department, South Kensington, London, was sufficient to convince the observer, that they came from an institution which deserves the name of an *Art Industrial School* in the best and fullest acceptation of the word. This opinion was upheld by the examples and copies, as well as by the work of the pupils. The examples and copies had been selected with rare knowledge, and comprised everything that can be of service to the pupils in all the various departments; they are not only perfectly well fitted to awaken the feeling of the pupils for beauty of form and color, to raise them above the common level, and to preserve the artistic element in the industries, in spite of wholesale production by machinery; but they will also teach the growing artist that moderation is an essential requisite for the attainment of ethical truth and absolute beauty in art-industrial production, and that it is imperatively necessary to avoid so-called artistic effects, if solidity is to be attained. No trace of such perverseness is to be found in the copies: they are conceived and executed in a purely artistic spirit. This is undoubtedly the most natural way to diffuse artistic elements among the people, as well as to make artists of those engaged in industrial pursuits."

The following list of the names of the places where the English Art Schools subordinate to the South Kensington Museum are located is taken from the Report of the Science and Art Department. The list also shows the population of each place in 1871, and the number of students attending each school for the year ending July 1, 1872. Totals: 123 schools, with 22,845 students.—(*Transl.*)

* "*Propositions, &c.*"—See Gottfried Semper: *Wissenschaft, Industrie, und Kunst. Vorschläge zur Anregung nationalen Kunstgefühls. Bei dem Schlusse der Londoner Industrie Ausstellung.* Brunswic, 1852.—*Transl.*

long as America is in her development, as long as the material aims of life are the only concern of her people, and as long as all the energies of the country are devoted to these aims, there can be no thought of ideal aspirations. And, whenever any thing of the kind is proposed, the attempt is limited to the continuation of traditions brought over from Europe. But these traditions are more likely to wither, than to flourish, in so strange an atmosphere. The productions of America in art, and especially in sculpture, are of European origin. Industry is bent upon usefulness, rather than upon artistic beauty; and individuality of taste is as yet out of the question. The leading cities of Europe will have to satisfy the wants of luxury in America for some time to come.

STATEMENT OF ART EDUCATIONAL PROBABILITIES IN AMERICA.

Architecture might perhaps be expected to develop an independent character before any of the other arts; but even in this department only European motives are to be seen; and, as there is no lack of means, these motives are frequently used as a pompous decoration of the most daring constructions. The photographs from Chicago, Cincinnati, and Philadelphia furnished characteristic specimens.

Taste can only be educated by means of well-organized museums and thorough instruction in art in the schools; but in both these particulars America is still upon the lowest stage. Speaking of schools especially, it must indeed be conceded that their importance is everywhere fully recognized, and that the amplest means are at the command of education. Specialists awarded high praise to the American schoolhouse at the Exhibition; the aids for teaching in the United States may be called models of their kind; but this is not all. The first condition in education is the teacher, and there is a want of these everywhere in America; not to speak of the fact, that there is as yet no system in relation to the categories of schools, and that each State, or perhaps even each city, has a different arrangement, which fact is also detrimental to a healthy development of educational matters. It can readily be perceived, therefore, why it has been impossible so far to establish High Schools (Universities) of the character of those in Europe.

EARLY ATTEMPTS IN SOME AMERICAN CITIES TO TEACH DRAWING IN PUBLIC SCHOOLS.

But, in spite of these less favorable auspices, numerous demands have been made, especially of late, for the introduction of drawing into the schools, and with the same aims which are now recognized in Europe. In the more prominent cities, drawing is already practiced, and the results were to be seen at the World's Fair. It was hardly to be expected, in view of the circumstances just indicated, that these results should be of much importance, even if the originals and the method in use were the best; but it is in these particulars more especially that nearly every thing is still left to be desired. Thus drawing is taught in many schools by teachers who have no special knowledge of the subject themselves, while the Berlin copies (by Hermes) are used as examples. Now and then special drawing-teachers are indeed employed in some of the larger cities; but how can rational instruction be looked for, when most of these teachers are in charge of far too great a number of pupils? A report from Toledo (Ohio), for instance, states that one general teacher of drawing is charged with the care of seventy-four school-rooms! The method employed could not be learned from the specimens exhibited by these schools.

The same is true of the Grammar Schools of New York, in which only landscapes, animals, flowers, &c., are drawn. The attempt to delineate geometrical bodies from nature is made only occasionally, and, in view of the inefficient preparation of the pupils, showed but little success. Some of the higher schools in New York exhibited framed drawings (by pupils of from twelve to fifteen years) of vessels, utensils, &c., as well as copies of heads, landscapes, and animals (after Hermes and Julien), which were of somewhat better execution; but these specimens were treated rather as "pictures" than as illustrations of the course of instruction. A number of ornaments (from Bauer's examples), were so evenly copied that it appeared doubtful whether the different names with which the drawings were signed represented also different hands. In Chicago it is the same; map-drawing is carried on extensively here, but the main stress appears to be laid upon the colored borders surrounding the oceans. The regulations for drawing-instruction in this city (paragraph sixteen) emphasize only the importance and the value of the subject in its relation to the various branches of industry, but contain no definite programme for the several stages of instruction.

The Common Schools of Cincinnati exhibited the work of their scholars in truly magnificent bindings, one subject having been drawn by the whole class, so that the same volume frequently showed the same figure fifty to sixty times.* The drawings consisted mostly of small geometrical figures, stars, &c., executed tolerably evenly, and there was at least a certain principle in them. Among the work of the Teachers', Normal, and High Schools, on the contrary, sins against every thing like good taste were to be met with, that made one's hair stand on end.

As aids for instruction in drawing, Spencer's Drawing-books were exhibited in the schoolhouse, the subjects being represented on the left half of the paper, while the right is left blank for the copy by the pupil. The various stages proceed tolerably systematically from simple geometrical forms to the representation of vessels, utensils, &c.

To judge from the specimens exhibited, drawing is best taught in Boston, and in Massachusetts generally.† In most of the schools, "The Drawing-Book of Standard Reproductions and Original Designs for Public Schools," by Walter Smith, has been introduced.‡ The work recommends itself, especially in its first parts for elementary instruction, advancing from a geometrical basis to simple ornaments; in the second part, a continuation of the ornament, there is a want of freshness in the treatment, and of definite style in the forms. This is followed up by heads, animals, flowers, and even whole human figures, arranged rather arbitrarily, and the whole executed in dry, cold outlines in pen-manner. Drawing in all the Public Schools is practiced according to this system, and the first exercises are generally executed upon slates. Further on studies are also made from plastic models, and the specimens exhibited showed very good results. Stereometric bodies, as well as vessels, vases, &c., are used for this purpose.§

"Picture-making" is again cultivated only in the Girls' Schools, in which the drawing-copies of Julien and of Hermes are exclusively in use.

Of the "Drawing Classes" there were drawings (from Smith's copies), which showed but moderate results; the work of the "Free Industrial Drawing Classes" of the State of Massachusetts, on the contrary, deserve full praise; there were to be found among them neatly executed heads (from casts, in two crayons) and good ornaments.

The specimens having special reference to art-instruction, which were exhibited by other countries, were too unimportant and insignificant to make it necessary for the reporter to mention them in detail. The badly drawn (French) flowers, and some heads from Berlin copies, exhibited by a school in Athens as evidences of modern art-instruction in Greece, the landscapes (Calame) from Constantinople, the faulty copies of heads (after Julien) sent by the Technical School at Cairo, only served to make evident the fact that the education of taste is quite neglected in these parts of the world.

The eye was especially pained by seeing these weakly productions in the Greek section, directly alongside of the classical fragments of the Acropolis. These venerable remnants of art at the World's Fair, surrounded by the modern efforts and struggles, which manifest themselves in all departments of science and of art, were a sad illustration of the vanity of earthly glory. But their immortal beauty made them capable at the same time of serving as noble examples, continually admonishing us to *strive for the highest in all things*.

* This had been done by order of the authorities.

† The drawings sent from the Boston schools to Vienna exhibited but the first elementary fruits of Prof. Walter Smith's instruction to the Boston teachers. His text-books, containing examples for the use of pupils in the public schools, had not then been prepared, and consequently the instruction had to be given by the regular teachers entirely from the blackboard. Since the introduction of Prof. Smith's text-books into the schools, a great advance has taken place in all grades.—*Transl.*

‡ The author is in error in supposing that Prof. Smith's "Drawing Book of Standard Reproductions and Original Designs" had been extensively introduced, or was intended for public schools generally. This work was only designed to furnish examples for first practice in High Schools, Evening Classes, &c.; and in the absence of all suitable copies with which to begin drawing in such schools and classes, Prof. Smith reproduced several of the standard English examples of outline copies, in connection with some designs of his own, to meet the emergency.—*Transl.*

§ The models were also exhibited.

APPENDIX W.

PAPERS MISCELLANEOUS AND SUPPLEMENTARY; WITH ACCOUNTS OF SOME NEW EDUCATIONAL INSTITUTIONS FOR INDUSTRIAL AND TECHNICAL TRAINING IN THE UNITED STATES.

- I. Introduction.
- II. The Armour Institute, Chicago, Illinois.
- III. The Jacob Tome Institute, Port Deposit, Maryland.
- IV. The Industrial Education Movement in the Schools of California.
 - (a) Manual Training. An Address by President Keyes.
 - (b) Synopsis of Report by Committee on Manual Training.
- V. The Throop Polytechnic Institute, Pasadena, California.
- VI. The California School of Mechanic Arts, San Francisco, California.
- VII. The Thomas S. Clarkson Memorial School, Potsdam, New York.
- VIII. Young Men's Christian Associations of North America; Educational Department: Class Work in Industrial Drawing and Elementary Technical Training.
- IX. The Brooklyn Exhibition of Works of Art Suitable for Decorating School Rooms.
- X. Two recent Statistical Papers by Hon. W. T. Harris, LL. D., U. S. Commissioner of Education.
 - (a) "What the South is doing in Education and What Education is doing for the South."
 - (b) "The Statistical Data to settle our Great Economic Questions."
- XI. Manual Training: Recent Progress of, in the United States.
 - (a) The Berkeley School Exhibit, New York City.
 - (b) Teachers College and Schools, New York City.
 - (c) The Horace Mann School.
 - (d) The Macy Manual Training High School.
 - (e) Conference on Manual Training in 1895.
 - (f) Latest Statistics in Report by U. S. Commissioner of Education for 1893-94.
- XII. Examples of Industrial Art Training in several countries of Europe.
 - (a) "European Industrial Art Schools in 1896," by L. W. Miller, Principal of School of Industrial Art of the Pennsylvania Museum.
 - (b) "Industrial Training for Girls in some Public Schools in Europe," by Jessie Patterson.

APPENDIX W.

SUPPLEMENTARY MISCELLANEOUS PAPERS.

I.

INTRODUCTION.

The delayed publication of the present and the succeeding volume of this Report,—the causes of which were set forth at some length in the introduction to Part II, the volume immediately preceding the present one,—emphatically illustrates by the additions thus made necessary to these latest volumes, the rapidity of the development in this country of institutions for promoting the various forms of education relating to the Industrial and Fine Arts.

In Part II, the plan adopted, of including in the "Introduction," in order to bring that volume down to date, a quantity of miscellaneous matter, comprising descriptions of new Institutions, new movements in education, recent "Reports" by officials, accounts of educational meetings, and sundry papers,—the several articles not having been inserted in their proper connection in the body of the volume, because that had been stereotyped before the later material was at hand,—having proved somewhat confusing; the arrangement of the present supplementary Appendix, to include similar miscellaneous material, is preferably made use of in this volume. The papers which make up this Appendix do not, therefore, bear any close relation to each other, though they are all included in the comprehensive scope and purpose of this Report. These papers are here inserted as showing something of the contemporary movements in those departments of educational activity, to the record of which this special Report is given.

The double purpose kept in view in the preparation of the several volumes of this Report; namely: to preserve past history, and, at the same time, to keep in touch with immediate developments, is not easy of accomplishment. The historical features of the work undertaken are held of primary importance; because, through the educational and daily press of the country, the newest features of any educational movements are sure of notice; while the facts of their origin, and the names of their first promoters, are speedily lost sight of and forgotten.

An effort is therefore made in these volumes to ascertain and recite the facts relating to the origin and development of the schools and institutions herein recorded; and, so far as feasible, to preserve the names of their early promoters and benefactors.

It is, also, sought to secure those materials of history in the form of occasional papers, addresses, and formal reports, which often exert marked influence in arousing and shaping public opinion and inciting educational movements; but which are so ephemeral in their

nature that, without special care, they are apt to be overlooked and forgotten amid the push and confusion of the world's daily activity.

It is, also, the object in this Appendix to give such details of methods of instruction, and of the courses of study, in the several institutions noted, as will be of service to those wishing to study and compare the different schools and methods.

It is hoped that the papers in this Appendix will serve in a measure to indicate the immediate trend of the movement for the extending of industrial and technical training; both in our own, and in foreign countries.

The opening paper after this introduction (II.) comprises an extended account of The Armour Institute of Chicago; with an interesting statement of the steps which led to its final evolution as a high class Technical and Technological Educational Institution.

The next paper (III.) is given to an account of The Jacob Tome Institute, at Port Deposit; which, in its location, and in its comprehensive character, will be found to be individual and of special interest.

A brief statement of The Industrial Educational movement in California, precedes accounts of two Industrial Art Schools on the Pacific Coast (Papers IV, V, and VI.) These show how general, throughout the United States, is the movement for Higher, as well as Elementary, Industrial and Technical Training. The following Paper, (VII.) is given to an account of the most recently founded of these Technical Schools—The Thomas S. Clarkson Memorial School, in Potsdam, New York, which is to open for the reception of pupils in September, 1896.

The paper (VIII.) which follows the account of this school, recites the efforts of "The Educational Department of the Young Men's Christian Associations of North America," to promote Industrial and Technical Training among these Associations. This is really one of the most convincing proofs that the importance of these forms of educational activity, has, at last, made an impression on the community at large.

The next paper is a brief reference (Paper IX.) to a charming exhibition made in Brooklyn, New York, by the Art Institute, of that City. In this collection were included engravings, etchings, photographic reproductions of views of classic works and of historic cities, with casts of antique statues, busts, and bas-reliefs; all suitable for the artistic surroundings of the school and class rooms.

Two important papers by Dr. Harris, whose thoughtful consideration of all educational topics is well known and appreciated by all educators, here follow. (X)

By those interested in the special problems which confront our countrymen, as well as in those which are propounded to the progressive world civilization of this 19th Century, these papers will be found worthy of careful consideration. They are included in this Report, because underlying all matters relating to the special training in Industrial and Artistic fields here inculcated, must be the graver questions which face our civilization. The topics of these papers are of import to every thoughtful American.

Several illustrations of the recent development of "Manual Training" in the United States, are given in (XI.); while two articles, by competent observers, on Industrial Art Training in some countries of Europe, (XII.) close the papers comprised in this, the final Appendix to Part III., of this Report.

II.

THE ARMOUR INSTITUTE, CHICAGO, ILLINOIS.

The following account of The Armour Institute of Chicago, logically belongs in Chapter V, in connection with like institutions in other cities, such as The Pratt Institute, of Brooklyn, and The Drexel Institute, of Philadelphia, but at the time those pages were stereotyped, The Armour Institute had not been opened.

This admirable institution is, however, so important, and the noble example of its Founder is so full of inspiration, that its omission was not to be thought of, if any way for including it in this volume could be found; with the adoption of the device of a supplementary appendix of miscellaneous papers, this history naturally takes its place as the opening paper.

For copies of the official statements from which this account is compiled I am indebted to the courtesy of Professor Thomas C. Roney, Dean of the Faculty, who in the letter accompanying the pamphlets, under date of August 3rd, 1895, gives in few words a striking picture of the eagerness with which this new opportunity for higher technical education was at once availed of.

DEAR SIR: * * * The Institute is now two years old. The attendance the first year was in all departments one thousand and fifty (1,050); this year it was eleven hundred (1,100); the applicants each year being largely in excess of those numbers. As you may infer from these facts, we have been so hard pushed to keep up with the current demands of the Institute that we have been unable, thus far, to prepare for publication more than a few circulars and courses of study, from time to time, as they have been needed. The constant development of the school, moreover, and the change of scope from that of an industrial school to that of an institute of technology of the character of the Massachusetts Institute of Technology, for example, have made it impossible for us thus far to put our school reports in the customary regular and permanent form. * * *

I have requested, also, that a circular of information be sent you, which includes, besides what you have received, an account of the founding of Armour Mission and of the relation of that enterprise to Armour Institute.

Sincerely appreciating your interest in the Institute, I am with sentiments of esteem,

Yours truly

THOS C. RONEY.

Col. I. EDWARDS CLARKE,
Washington, D. C.

In these few words taken from the letter of Professor Roney, two facts in relation to the Institute which are of special interest are clearly referred to; First: that as this enterprise by Mr. Armour took shape, the evolution from his original plan of founding merely a practical elementary industrial school, into that of the far greater undertaking of creating a high grade technological institution of science, was very rapid; and, Second: that the original plan which led to this resultant institution, had its beginning in the benevolent foundation for aiding and christianizing the children and youth in

a certain quarter of Chicago, which was established by the bequest in 1881, made by the will of a deceased brother of Mr. Philip D. Armour.—“How far yon little candle sheds its beams!”

It is, perhaps, partly owing to the peculiar facts of its origin and gradual development in the mind of its founder, that Armour Institute,—while resembling in many features Pratt Institute, Drexel Institute, and the Massachusetts Institute of Technology,—still has its own distinctly individual character. It is for this reason that a brief account of the pioneer institution, which must ever be associated with it in the minds of those acquainted with the facts attending the conception and realization of the plan of the later Institute, is here given.

ARMOUR MISSION.

In the pamphlet circular,* before referred to, which contains the official statement of these Armour institutions, twenty-five pages, out of a total of eighty, are given to an account of the origin and working of the Armour Mission. Seven full pages of illustrations are given, which include a view of the fine building of the Mission; a likeness of the late Mr. Joseph F. Armour, founder of the Mission; four pages of groups of pupils; one, the assembly of the kindergarten children; two, showing the two drill companies of older girls; one, of the officers of the “Armour Battalion” of boys and young men; and one, of groups of statuary from the kindergarten.

These interesting and attractive photographic “Human Documents” eloquently witness to the good work done and admirable results effected by the Armour Mission.

The following opening paragraphs taken from the circular, which give an account of the work of the several departments of the Mission, show the enterprises grouped about the Armour Institute, and illustrate how this grand educational institution grew directly out of this Mission Sunday School!

ARMOUR MISSION.

Mr. Joseph F. Armour, who died in 1881, made a bequest of \$100,000 to found an institution whose purpose should be to reach the people with the teachings and influences of the Gospel of Christ, and especially to insure the care and development of the children and youth of that part of Chicago where Armour Mission is now located. Thus was laid the foundation of all this endeavor for the blessing of humanity, in the supreme value which he placed upon the child. It was entirely characteristic of his faith and life that he should so express himself.

Mr. Philip D. Armour was given charge of this trust. He has preferred to take his brother's bequest as a suggestion; and his benefaction has multiplied the amount many times, his own gift reaching the sum of two millions of dollars.

The result has been not only the building of Armour Mission, but also the Armour Flats, and later Armour Institute. This large property has been deeded to a Board of Trustees, and the income is to be forever used for the uplifting and education of the people. It thus constitutes a memorial of the noblest order. The doors of Armour Mission were opened to the public Sunday, December 5, 1886, and on the 24th day of December, 1892, the public was made aware of the gift of Armour Institute.

In the summer of 1874 a Mission Sunday School called Plymouth Mission was organized; and, beginning with 27 persons including the children in attendance on its opening, steadily progressed; moving at intervals to more commodious quarters as the attendance increased.

* Circular of Information of Armour Institute and Armour Mission, Chicago, 1895, Pp. 30.

"Mr. Joseph Armour, was deeply interested in the prosperity of this school and contributed to its support."

"When Mr. Philip D. Armour, in carrying out the purpose of his deceased brother and himself, had completed the spacious building known as Armour Mission, the Plymouth Mission Sunday-school was invited to make this beautiful edifice its future home. When the school came to the new building, the same officers and teachers, who were largely from Plymouth Church, were retained. The school had now attained a membership of five hundred, and at the first services in Armour Mission some seven hundred persons were present."

"Rev. John D. McCord, who was serving as pastor to Plymouth Mission, continued in that relation to Armour Mission. Regular services were maintained Sunday mornings and evenings, with the Sunday-school session at three o'clock in the afternoon."

"Armour Mission is an undenominational enterprise. No provision has been made for an organized church, yet a large number of families and individuals count themselves as adherents to the Mission. Ever since it began its work it has had a pastor; the ordinances have been administered, and the families identified with it have had pastoral care."

* * * * *

"One of the most interesting features connected with the Armour Mission was the Industrial School, of which Mrs. Julia Beveridge was Superintendent, assisted by Mrs. Mattie M. Gaw and other workers. The training of the girls in sewing and the drill of boys and girls in drawing, wood carving, clay modeling and mechanical work excited much interest. Out of the success of these efforts for the young grew larger plans and purposes, and now Armour Institute, with its complete courses of instruction, makes this school no longer necessary."

"When Mr. Armour decided on a larger development of his philanthropic purposes, and proposed to found Armour Institute as a technical school for the education of the people, it was necessary to have some one who would take supervision of all departments of the enterprise. Such a leader was found in the person of Dr. F. W. Gunsaulus. The Institute is not established for any class, either rich or poor; its doors will not be closed to any worthy young person who desires its privileges. Its aim is to meet the youth of Chicago and the Northwest, and offer the advantages of a thorough technical education. Already a large number of boys and girls, who have been connected with the Mission, are availing themselves of its advantages. The desire of the founder, and of those associated with him in the administration of this trust, is to reach the greatest possible number of people with such influences as will contribute to the development of the best and truest manhood and womanhood. It is hoped that this will result in a higher type of citizenship, a more devoted patriotism and a better preparation for the coming Kingdom of Righteousness."

The Sunday School of Armour Mission, before known as the Plymouth Mission Sunday School, began in 1886, with a membership of five hundred; and in 1895, "has an enrollment of twenty two hundred." There are several separate "departments", and a Kindergarten for the youngest children. There is in all a Directive Force of thirty-five officers and one hundred and twenty teachers. There is a library of sixteen hundred volumes. There are a number of social organizations connected with the Mission. Among these are three young peoples societies of "Christian Endeavor"; the Women's "monthly meeting"; a "Saturday Night Literary and Debating Club of Young Men"; a Young Woman's "Friday Evening Club" for mental improvement; a "Music Department"; with several stated meetings and several choirs. The Armour Kindergarten employs a Principal, two assistants and eight pupil teachers.

THE KINDERGARTEN ESTABLISHED BY MRS. PHILIP D. ARMOUR.

The encouraging work of the Kindergarten had its origin, as it has its development, in the generous thought of Mrs. Philip D. Armour. From the first, it has been the object of her love and care. The children of Armour Kindergarten are of all sorts and conditions. Dainty little maidens from the Flats sit beside other less favored little ones, to whom the Kindergarten seems a paradise of delight, warmth,

and freedom, after their experience in some dark and dingy rear tenement. There is no color line. The small colored residents of Armour Avenue and Dearborn Street are on the same footing as their fairer friends from more aristocratic environments. Good behavior and an honest effort "to do their best" are the only requirements for social distinction of the children. A large proportion are of Swedish parentage, and among these are found some of the most painstaking workers. There are also Germans, Irish, Italians and French, besides young Americans, properly so called. The children come from a wide territory, north as far as Twenty-eighth Street, south to Thirty-seventh, east to Wabash Ave., and west to Portland Ave. But winter cold or summer heat does not seem to discourage the little folks, the average attendance remaining about the same through the eleven months of the year, the school being closed during August. Children are admitted at three years of age and kept until six, the school age. All applicants are received, the commodious quarters making this possible. Visitors are always welcome, and seldom a day passes without many of them, who wonder, question and admire. Once a month the mothers of the children meet with the teachers, when a short talk bearing on the children, their physical wants, moral training, home amusements, etc., is given. Slight refreshments are served and conversation flows freely, resulting in a better understanding between teachers and mothers.

Every Friday a light lunch is served, and any child who has been so fortunate as to have had a birthday during the week is given a birthday cake ornamented with the proper number of candles, which, when lighted, give the room quite a festal appearance. Cake and candies are afterward borne home in triumph, where a second celebration takes place, making the day one long to be remembered; so much so, that claims are often made to birthdays which a reference to the book does not substantiate.

Friday is felt to be the happiest day of a happy week. Little surprises are planned on this day for the children in the way of special music, to which the children listen with evident delight. The teachers, with the exception of the assistants, are members of the training class of the Chicago Free Kindergarten Association, Miss Eva B. Whitmore, Superintendent, which forms a department of Armour Institute, Armour Kindergarten being but one of twenty-two free Kindergartens in the city under this Association. The pupil teachers thus have daily opportunity of putting into practice their theories of work, and are changed to other Kindergartens as often as is necessary for their growth.

MILITARY AND GYMNAS TIC FEATURES.

"The Armour Battalion", first organized in 1891, by Rev. Howard H. Russell, the pastor, as "The Boys' Brigade of Armour Mission" for military drill,—each boy pledging himself not to use tobacco, ardent spirits, or profane language,—was re-organized as "Armour Battalion", in November 1893. There are three companies and a total of one hundred and fifty members.

The "Armour Drill Corps", is composed of two companies of girls; who are given a special drill for physical culture. They have an annual encampment of two weeks in summer. All these companies of boys and girls are dressed in simple becoming uniforms. Popular entertainments, lectures, concerts and exhibitions have always been a feature of the "Mission." A Dispensary for giving medical attendance to the poor is attached to the Mission and reports a total of 13,707 patients treated for 1893-4.

ARMOUR FLATS.

In common with some of the practical business men who have proved themselves to be public benefactors by their liberal and wise endowments of public Educational Institutions,—several of whom are mentioned in the preceding account of the Pratt Institute of Brooklyn, (see page 449 of this volume.) Mr. Armour, has not only built and equipped the Institute, but has also made provision for its future support, by giving, as a part of its endowment, the valuable parcel of improved income-producing real estate, known as "The

Armour Flats." In the circular here quoted three full page views of these buildings are given. These views are most attractive. The following is the statement as given in full.

The Armour Flats consist of two hundred and thirteen separate suites of apartments, and, with Armour Mission, are located at the intersections of Thirty-third, Thirty-fourth, Dearborn Streets and Armour Avenue. They are convenient to down town and cross town street car lines, and to the perfect passenger service of the Lake Shore and Michigan Southern and Chicago, Rock Island and Pacific Railroads, whose joint station at Thirty-first Street is but two squares distant; also the Elevated Road with its station at Thirty-third and State Streets.

This is an attractive residence neighborhood, and is but twenty minutes' ride from the business center. The entire income from this property is devoted to the uses of the Mission and the Institute.

The buildings are models of architectural skill, both in exterior appearance and interior arrangement and finish. They are three and four stories high, with basements, and contain two flats upon each floor, all flats having street fronts. The first story and basement of the outer front wall are constructed of Lake Superior variegated stone, and the upper stories of red pressed brick.

The interior arrangement is both compact and convenient. Each room is well lighted and ventilated, and no expense has been spared to insure pure air and a perfect sanitary condition throughout. The wood work is oiled, natural finish. They are provided with elegant mantels, handsome gas fixtures, window shades and screens, bath rooms, stationary ranges, hot and cold water, and hall gas lights for night time. The management pay all water taxes levied, provide competent janitor service during day time, and the services of watchmen at night. The streets are sprinkled and lawns kept in good condition during the summer, and the snow is removed from the walks in winter, free of charge to tenants. In fact, everything is done to make these flats attractive, cheerful and desirable homes. In the rented flats the tenants in all cases get good, desirable neighbors, and people of unquestioned respectability and standing.

Parties desiring convenient, cheerful and comfortable flats, of from six to seven rooms, among good neighbors, in a healthful, cheerful and desirable residence neighborhood, at a very moderate rental, can find nothing so good or cheap in this city, every thing considered.

The residents of the flats have many privileges in connection with the entertainments furnished by the Mission and the Institute, in the way of lectures, concerts, etc., use of kindergarten, library and reading room.

A competent manager is located at the office of Armour Flats, to whom all matters of management are entrusted, and all requests may be lodged with him.

Only desirable and thoroughly respectable applicants will be accepted.

Rents range from \$23 to \$35 per month, according to location of flats.

Agents are upon the premises at all times to show applicants through the unoccupied flats.

OFFICE OF ARMOUR FLATS, 3322 Armour Avenue.

ARMOUR INSTITUTE.*

When the fine building on the corner of Armour Avenue and Thirty-Third Street occupied by The "Institute" was in process of erection; and, indeed, after its completion, there was, on the part of the public, considerable speculation as to its purpose. In fact, as already noted in the accounts of the group of buildings and organizations clustered about this crowning central institution, the plan finally decided on, proved to have been a growth; rather than a complete conception at first, in the mind of its Founder.

When first after the completion of the building, the direction of the new undertaking was confided to the care of the Rev. Doctor Gunsaulus, as President; the energy and zeal of this enthusiastic Director, so manifested itself in his all-embracing plans for the work

*The statements of The Institute, its plans, departments, and officials, which follows are taken from the official publication, "Circular of Information of Armour Institute," Chicago, 1895, Pp. 49.

of the Institute, that, for a little, it seemed that it was to be like Aaron's rod, and to swallow up all the other admirable instrumentalities for Art, and Industrial Training, which had been established in the city of Chicago. That this new school was to monopolize all the elementary art work, so well provided for by the Art Institute under the masterly direction of Mr. French; as well as all the technical work in Industrial Art, so admirably carried on by Mr. Belfield, in the Chicago School for Manual Training.

Later, an alliance between the two first named institutions was effected, so that they admirably supplement and complement each other; the purely art parts of the training of the pupils, in architecture for example, being given by the Art Institute; while the scientific and mechanical training, equally essential to the complete education of the architect, is given in the Armour Institute; so that each Institution, instead of rivalling and weakening the other, mutually strengthens it; while the students may profit by the increased facilities thus afforded.

It was speedily demonstrated that the growing desire for technical and artistic education, promised to test to the utmost the capacity of the new institution.

A well printed pamphlet of 49 pages, entitled "Circular of Information of Armour Institute, Chicago, 1895," which has a copy of the handsome Seal of The Institute, with its motto, "Speak True, Do Right," engraved on the cover, is issued; giving full details of the plan, organization, programme of "courses of study," and lists of the Directors, and of the Faculty. A fine view of the building, and a portrait of President Gunsaulus, adorn the pamphlet.

From this official publication, the following statements concerning the several departments, and courses of study, comprised in this vigorous young institution are here quoted in full: as affording opportunity for a comparison in detail, with the departments, and courses of study, in the "Pratt," and "Drexel," Institutes of Brooklyn and Philadelphia; the two Institutes, with which it may be classed.

ARMOUR INSTITUTE.

AIM.

This institution is founded for the purpose of giving to young men and women the opportunity of securing a liberal education. It is hoped that its benefits may reach all classes. It is not intended for the poor or the rich, as sections of society, but for any and all who are earnestly seeking practical education. Its aim is broadly philanthropic. Profoundly realizing the importance of self-reliance as a factor in the development of character, the founder has conditioned his benefactions in such a way as to emphasize both their value and the student's self-respect. Armour Institute is not a free school; but its charges for instruction are in harmony with the spirit which animates alike the founder, the trustees, and the faculty: namely, the desire to help those who wish to help themselves.

It is the design of Armour Institute to educate the head, the hand, and the heart. *Knowledge, skill, and culture* are the three constituent elements of a liberal education, and their attainment by the student is provided for through an adjustment of all the resources of the Institute, in accordance with the following plan.

PLAN.

This plan is three-fold:

1. (*Knowledge*). Situated in the midst of a community which is rapidly being permeated with the liberalizing influences of great universities, the Institute undertakes, in harmony with the sentiment of its trustees and its president, to say that so far as its aid can reach them young persons shall not be deprived of these educational privileges for lack of adequate preparation. Therefore it has established a

"Scientific Academy," in which students are prepared for admission to the scientific courses of these schools, as well as to the advanced courses of the Institute, which are comprised in its "Technical College."

2. (*Skill*). The second feature of this plan of education has to do with the now universally recognized form of instruction known as manual training. But manual training in Armour Institute does not exist for itself or as an independent study, but it is a part of the technical courses,—notably in the Department of Mechanical Engineering,—and of the classes in the domestic arts. These courses demand and develop a high degree of manual proficiency.

3. (*Culture*). The third phase of this educational scheme is concerned mainly with ethics and aesthetics. Armour Institute is avowedly a Christian school, and Christian standards of culture will be recognized, but without any intrusion of denominational or sectarian bias. The drill of the class room and the workshop is reinforced with whatever contributes to elevation of sentiment, purity of taste, and refinement of manners. The Institute library and the numerous works of art minister to this end, and the student's horizon is widened by courses of lectures, by addresses from distinguished men and women, and by musical and dramatic recitals. The social as well as the intellectual life of the Institute is fostered by literary, scientific, and art clubs, and by the cordial relations which it is the intention of the president and the faculty to maintain with the entire body of students.

ORGANIZATION.

Armour Institute is organized into departments, each of which is in the charge of a director. The departments already organized are the following:

I. The Scientific Academy. II. The Technical College, comprising: 1, The Department of Mechanical Engineering; 2, The Department of Electricity and Electrical Engineering; 3, The Department of Chemistry and Chemical Engineering; 4, The Department of Architecture; and 5, The Department of Library Science. III. The Department of Domestic Arts. IV. The Department of Commerce. V. The Department of Music. VI. The Department of Kindergartens.

BUILDINGS AND EQUIPMENT.

The home of Armour Institute is a magnificent fire-proof building of the most modern construction, five stories in height (above the basement), and furnished with every convenience that health, comfort, and the requirements of such an enterprise could dictate. The Department of Kindergartens is provided with commodious quarters in Armour Mission, which is close at hand. The work of the Department of Architecture is carried on, in part, in the "Memorial Art Palace," situated at the foot of Adams street.

Besides the equipment of the several scientific departments, which is of the completest description, the Institute has a fine gymnasium, a technical museum, rich contributions to which are now being obtained, and a library, which, though not yet two years of age, is a distinctive feature in the life and thought of the community. As throughout the entire building the best specimens of the engraver's and the etcher's art may be found, so here are properly placed such pictures as Moschelle's portrait in oil of Robert Browning, painted from life, Whistler's "King Lear," and a very early copy (1520) of Raphael's "Violinist." Many autograph letters of the most distinguished literary men of our time make the portraits interesting. The library consists of about fifteen thousand volumes, many of them of the highest value. The collection of early printed books is very large and is located at present in the museum. The library is meant to be a rallying place for all the forces of intelligence in the community, and is entirely free.

GENERAL INFORMATION.

Special circulars have been prepared for the several departments, giving full information regarding the courses, requirements for admission, degrees, tuition, fees, etc., of the Institute, and will be mailed, upon application, to any address. Young men and women are particularly invited to communicate with the Dean of the Faculty with regard to proposed courses of study.

EXAMINATIONS.

The entrance examinations for 1895-96 will be held at the Institute on the 1st and 2d days of July and the 12th and 13th days of September.

COURSE I.—*Scientific Academy.*

Subjects.	Recita- tions per week.	Subjects.	Recita- tions per week.
FIRST YEAR.		THIRD YEAR—continued.	
Fall term:		Fall term—Continued.	
Latin	5	Chemistry	5
English	5	Latin	3
Algebra	5	Winter term:	
Winter term:		French or German	5
Latin	5	English history	5
Algebra	5	Chemistry	5
Introductory science	5	Latin	3
Spring term:		Spring term:	
Latin	5	French or German	5
Algebra	5	American history	5
Introductory science	5	Chemistry	5
		Latin	3
SECOND YEAR.		FOURTH YEAR.	
Fall term:		Fall term:	
Latin	5	French or German	5
Plane geometry	5	Solid geometry	5
Greek history	5	Physics	5
Winter term:		Latin	3
Latin	5	Winter term:	
Plane geometry	5	French or German	5
Roman history	5	Algebra	5
Spring term:		Physics	5
Latin	5	Latin	3
Plane geometry	5	Spring term:	
English	5	French or German	5
THIRD YEAR.		Plane trigonometry	5
Fall term:		Physics	5
French or German	5	Latin	3
English	5		

COURSE II.—*Scientific Academy.*

FIRST YEAR.		THIRD YEAR.	
Fall term:		Fall term:	
Latin	5	French or German	5
English	5	English	5
Algebra	5	Chemistry	5
Winter term:		Winter term:	
Latin	5	French or German	5
Algebra	5	English history	5
Introductory science	5	Chemistry	5
Spring term:		Spring term:	
Latin	5	French or German	5
Algebra	5	American history	5
Introductory science	5	Chemistry	5
SECOND YEAR.		FOURTH YEAR.	
Fall term:		Fall term:	
Latin	5	French or German	5
Plane geometry	5	Solid geometry	5
Greek history	5	Physics	5
Winter term:		Winter term:	
Latin	5	French or German	5
Plane geometry	5	Algebra	5
Roman history	5	Physics	5
Spring term:		Spring term:	
Latin	5	French or German	5
Plane geometry	5	Plane trigonometry	5
English	5	Physics	5

COURSE III.—*Scientific Academy.*

FIRST YEAR.		SECOND YEAR.	
Fall term:		Fall term:	
English	5	French or German	5
Greek history	5	Civil government	5
Algebra	5	Plane geometry	5
Winter term:		Winter term:	
Algebra	5	French or German	5
Introductory science	5	English	5
Roman history	5	Plane geometry	5
Spring term:		Spring term:	
Algebra	5	French or German	5
Introductory science	5	English	5
Physiography	5	Plane geometry	5

COURSE III.—*Scientific Academy*—Continued.

Subjects.	Recita- tions per week.	Subjects.	Recita- tions per week.
THIRD YEAR.		FOURTH YEAR.	
Fall term:		Fall term:	
French or German.....	5	Solid geometry	5
English.....	5	Biology (zoology)	5
Chemistry	5	Physics	5
Winter term:		Winter term:	
French or German.....	5	Algebra	5
English history	5	Biology (physiology)	5
Chemistry	5	Physics	5
Spring term:		Spring term:	
French or German.....	5	Plane trigonometry.....	5
American history.....	5	Biology (botany)	5
Chemistry	5	Physics	5

COURSE IV.—*Scientific Academy*.

FIRST YEAR.		SECOND YEAR—continued.	
Fall term:		Fall term—Continued.	
English.....	5	Chemistry	5
Greek history or civil government...	5	Spring term:	
Algebra	5	French or German.....	5
Winter term:		Plane geometry.....	5
Algebra	5	Chemistry.....	5
Introductory science.....	5		
English history, Roman history, or		THIRD YEAR.	
English.....	5	Fall term:	
Spring term:		French or German.....	5
Algebra	5	Solid geometry	5
Physiography or American history..	5	Physics	5
Introductory science or English.....	5	Winter term:	
SECOND YEAR.		French or German.....	5
Fall term:		Algebra	5
French or German.....	5	Physics	5
Plane geometry	5	Spring term:	
Chemistry	5	French or German.....	5
Winter term:		Plane trigonometry.....	5
French or German.....	5	Physics	5
Plane geometry	5		

DEPARTMENT OF MECHANICAL ENGINEERING.

[FRANK C. HATCH, Sc. D., Director.]

The arrangement of a course scheme in Mechanical Engineering is intended to be progressive, to equip the student fully along all the lines of his professional life, and to co-ordinate the theoretical principles underlying the work with practical exposition and training in the shops and laboratories of the Institute, as well as with results obtained from frequent inspection visits to manufacturing establishments and mill plants.

REQUIREMENTS FOR ADMISSION.

The preparation required for this course is the completion of Course II, III, or IV of the Scientific Academy; no student will be matriculated until he has complied with these requirements. For the year 1894-95 no candidates for admission to the junior or senior classes will be received.

It is absolutely essential that the work of the two earlier years, upon which the student bases later success—the inculcation of correct methods of thought and habits of action—be particularly earnest and thorough, and stress will be laid upon the satisfactory progress of the student in the science work of these periods.

SHOP WORK.

The shop work comprehends the manipulation of wood, iron, steel, and brass, to accord with the demands of a thorough technical and mechanical education. Students presenting certificates from technical schools, or preparatory manual training high schools, will be entitled to credit for the amount of shop work they have accomplished, and can elect the higher instruction in these forms, or pass, by consent of the directors of other departments, to advanced study and investigation.

MECHANICAL DRAWING.

It is the intention of the department to make the drawing, as it proceeds through the entire curriculum, of special importance. The mechanical drawing of the freshman year, covering simple geometric work, orthographic projection, shades and shadows, isometric and working drawings, leads directly to the descriptive geometry and machine sketching of the sophomore year. This, in turn, is followed by the machine drawing and general designing of the last two years. After the year 1894-95 a course in freehand drawing, extending through the freshman year, will be required of the student in mechanical engineering.

The course for the junior and senior years embraces in educational sequence, kinematics, machine drawing and design, study of materials, steam engineering, thermo-dynamics, boilers, hydraulics, applied mechanics, statics, dynamics, and extensive practice in engineering laboratory, with extended inspection visits and reports, leading up to thesis work. This latter feature will be assigned to the student in the senior year, and it is intended that he shall present the results of experimental investigation in some department of his engineering instruction.

LECTURES.

Frequent lectures will be given throughout the entire course in drawing, machine manipulation and care, and on the business problems that present themselves in practical estimating, design and superintendence of engineering plants.

DEGREES.

The degree of Bachelor of Science in Mechanical Engineering will be given to students who have completed the prescribed studies and exercises of the four years, passed the final examinations, and submitted satisfactory results in the thesis work assigned. Upon the completion of an additional year of resident post-graduate study and investigation, or after two years of actual engineering work, the degree of Mechanical Engineer will be conferred.

TUITION.

The tuition for the course in mechanical engineering is \$60 per year, besides a laboratory fee of \$5 per term.

DEPARTMENT OF ELECTRICITY AND ELECTRICAL ENGINEERING.

[WILBUR M. STINE, Ph. D., Director.]

The course in Electricity and Electrical Engineering, in common with the other courses of the technical college, extends over a period of four years. The preparation required for this course is the completion of Course II, III, or IV of the Scientific Academy. It has been deemed wise to make it a more distinctively electrical course than is common with other electrical schools, and to this end both lectures and laboratory work on electrical subjects extend throughout the four years. This marked emphasis has been placed on the electrical portion of this course to accomplish the most thorough training both in theory and practice, in the hope that students may upon its completion be immediately available for commercial work, and that it may by careful and conscientious conduct in a great measure bridge over the hiatus between the school on the one hand and the electrical factory, central station, or usual engineering practice on the other. Due prominence is given to the idea that a thoroughly trained electrical engineer must be equally well grounded in mechanical and steam engineering and machine shop practice. The degree to be conferred upon the completion of the full course in electricity is Bachelor of Science in electrical engineering. Upon the completion of an additional year of resident post-graduate electrical and mechanical study and testing, or after two years of actual engineering work, the degree of Electrical Engineer will be conferred.

ELECTRICAL ENGINEERING.

The work in electrical engineering covers the theoretical treatment of electricity and magnetism, and the relations to their applications in electrical machinery, apparatus, and practice. Telegraphy and telephony are given such attention as shall prepare young men to enter upon these fields of work. Due attention is given primary and secondary batteries; arc and incandescent lamps, and photometry;

the design, construction, and calibration of the various meters employed in the commercial measurements of voltage, current, and power; converters and general transforming devices; wires, cables, and line construction; installation and general station operation.

LABORATORY PRACTICE.

So far as practicable this work is directed towards such measurements and determinations as arise in actual practice, both in subject matter and in the apparatus employed. Stress will be laid upon the design and construction both of laboratory and commercial electrical apparatus in the shops of the mechanical and electrical departments; and in some instances originality of design will be encouraged. Every variety of test and computation employed in actual practice will, so far as the resources of the laboratory permit, receive attention. The work of the lecture room and laboratory will be frequently supplemented by visits to power and lighting plants and the various electrical manufacturing; and opportunity will be given for various tests and measurements of value. In order to impart actual drill in station management, each student will be employed in actually operating the dynamos used for power and light at the Institute.

ADVANCED PHYSICS.

The course in advanced physics in the Sophomore year includes the discussion of matter and energy, kinematics, and the subjects of light, heat, and sound. During the Junior year this subject is continued in the physical laboratory.

CHEMISTRY.

The course in chemistry includes the gravimetric and electrolytic determinations of the more important metals and alloys employed in engineering. One term in the Freshman year is allotted to lectures on such subjects in organic chemistry as enter into the theory and practice of electrical engineering.

ELECTRICAL PLANT.

The electrical plant comprises two dynamos, which furnish both power and light for the buildings of the Institute. One is a 50 k. w., 110 volt, C. & C. dynamo; the other a 45 k. w., 1,100 volt, Westinghouse alternator, giving at a speed of 900 7,200 alternations per minute. These are belted to a main shaft, with independent clutches, and driven by a 22 by 48 Hamilton-Corliss engine. The boiler plant consists of two Stirling Safety water tube boilers, of a nominal rating of 200 horsepower each. There is also a storage battery of sixty, 180 ampere-hour cells, which is used for lighting the building when the dynamos are not running.

At present there are in use in the laboratory a 5 horsepower alternating dynamo, rated at 8,000 alternations per minute, excited by a 9 ampere 110 volt, Westinghouse exciter; a 4 k. w., 110 volt C. & C. dynamo; a 5 horsepower 500 volt, letter "G" type Westinghouse power generator; and a 75-light, 110 volt Edison dynamo. These are used mainly for testing purposes. A small Crocker-Wheeler coupled dynamo-motor has been specially constructed for storage battery testing and electroplating.

POWER EQUIPMENT.

The power equipment consists of a 5 horsepower slow speed Crocker-Wheeler motor, used for driving the testing dynamos; a 10 horsepower extra slow speed Perret motor, for driving the machinery of the wood working shop; two small Perret motors, and two 1 horsepower Wagner motors belted to the line shafts in the electrical shop. A small composite dynamo and multiphase motor are used for demonstration, but it is intended to add a representative equipment of this important class of machinery.

LECTURE AND LABORATORY EQUIPMENT.

The lecture and laboratory equipment is probably not surpassed by any other in this country. There are now in use 24 sets of Wheatstone bridge apparatus, including a number of the highest accuracy; 3 Carey-Foster commutators for comparing standards of resistance; 60 galvanometers, including nearly every type in use, and many suitable for work of the greatest precision and delicacy; 21 reading telescopes, and numerous lamp stands and scales; 60 ammeters and voltmeters of various ranges and types; 3 wattmeters and 6 electrodynometers; 4 Thomson balances;

3 accurate potentiometers; 5 standard condensers, single and subdivided; 12 resistance sets, including many calibrated within one part in 5000; 4 100,000 ohms resistance sets, 1 wire megohm, 1 subdivided wire megohm, and 4 carbon megohms; 15 standard cells; 9 electrometers for demonstration and accurate measurement; 24 current and power meters; 12 converters of various capacities and types; 1 Ewing curve tracer; 1 contract maker; 1 secohmmeter and standards of self-induction; 3 earth inductors; 40 standards of resistance from $\frac{1}{1000}$ ohm to 1,000 ohms, the majority of which are accompanied by certificates of their value from the Cavendish laboratory and laboratory of the Physikalische Reichsanstalt, and a large list of isolated pieces of valuable accessory apparatus. The equipment is still far from complete, and the lacking instruments and machinery and duplicates are being constantly added.

In the course of the next few months it is expected that the calibrating bureau will be thoroughly equipped and in operation. With such accurate standards and complete list of standardizing apparatus, it is desired that this bureau may be of great service to institutions and the engineering profession by its careful calibration of measuring instruments, and thus raise the degree of accuracy of commercial work.

TUITION.

The tuition for the course in Electricity and Electrical Engineering is \$60 per year, besides a laboratory fee of \$5 per term.

DEPARTMENT OF CHEMISTRY AND CHEMICAL ENGINEERING.

[JAMES C. FOYE, Ph. D., LL. D., Director.]

The courses of study in Chemistry and Chemical Engineering in the Technical College cover four years. The preparation required for either course is the completion of Course II, III, or IV of the Scientific Academy.

The course in chemistry is designed to meet the wants of those who intend to become professional chemists or who wish to devote themselves to scientific investigation, and provides also for any who intend to become teachers of chemistry.

The instruction in chemical engineering is intended to meet the wants of students who wish to acquire a knowledge of chemistry, as applied to engineering professions, which will enable them to engage in industries demanding the attainments both of the engineer and the chemist.

The studies of the third and fourth years in each course are so arranged as to allow the student, to a certain extent, to elect those topics to which he wishes to devote special attention.

In addition to the studies in chemistry and engineering, a wide range of other branches is offered, which includes higher mathematics, physics, electricity, biology, geology, modern languages, English literature, rhetoric, logic, history, and political science. These are selected in part because of their bearing upon the main topics and in part because of their educational value.

The degree of Bachelor of Science is conferred upon those who complete either the course in Chemistry or the course in Chemical Engineering.

GENERAL CHEMISTRY.

The chemistry of the Scientific Academy begins with a thorough course in the elements of general chemistry, which are taught by experimental lectures, classroom recitations, and laboratory work. Students are required to attend lectures and recitations three or four hours per week and to spend from three to four hours per week in practical work in the laboratory. The lecture, recitation, and laboratory work continues through the fall and winter terms. The lectures and recitations are arranged so as to coordinate and systematize the knowledge obtained in the laboratory. Theories are drawn from the facts studied. Considerable time is spent in writing equations to represent the reactions which have been observed in the laboratory work and in working the problems based on these reactions and equations.

Two objects are constantly kept in view, first, to develop a scientific habit of thought and to train the student in inductive reasoning; secondly, to lay a foundation for future study of chemistry. To this end, laboratory exercise is personally supervised by the teacher, who takes the students in small sections. In this way neat and careful work can be insisted on. If any important phenomena have been overlooked by the student he can be required to perform the experiment a second time and by proper questions can be led to draw correct conclusions. By this constant supervision and questioning the student obtains the maximum benefit from his work.

QUALITATIVE ANALYSIS.

Instruction in qualitative analysis is given in the spring term of the last year of the Scientific Academy. Only those students are admitted to this class who have passed a satisfactory examination in the chemistry of the preceding year. The aim is to train the faculties of observation and reflection as well as to lead the student to acquire a knowledge of chemistry and skill in chemical manipulation. No textbook is used, but the works of the best authors are at hand for consultation. Under the immediate guidance of the teacher the characteristic chemical reactions of metals and acids are investigated by the student at his laboratory table, who then makes a record of his conclusions, which are reviewed by the teacher.

QUANTITATIVE ANALYSIS.

A course in quantitative analysis extends through the freshman year. It begins with the determination of combining weights, followed by the gravimetric analysis of substances of known composition. This is succeeded by instruction in volumetric analysis with exercises in the more simple determinations. The work of the year closes with applications of these principles. A text book is used and the works of standard authors and copies of scientific periodicals are at hand for consultation.

This course is followed by instruction in the complete analysis of ores, slag, pig iron, alloys, coal, fertilizers, clays, and mineral waters. The methods given in the latest works of the best authors and in the current scientific periodicals are used. Whenever practicable, comparisons of the results of analysis by different methods are made.

ADVANCED QUALITATIVE AND THERMO-CHEMICAL ANALYSIS.

Instruction is given in the qualitative analysis of soils and waters. This will facilitate some of the work in the quantitative analysis given later. After this, exercises in toxical analysis of some of the more commonly occurring inorganic poisons are given. The instruction in thermo-chemical analysis includes, in addition to the ordinary blowpipe analysis, the Bunsen and other flame reactions, the production of iodide coats and plaster casts, and other thermal tests.

ORGANIC CHEMISTRY.

The general subject of organic chemistry is taught by a course of lectures, recitations, and laboratory work.

The lectures and recitations deal pretty thoroughly with the theoretical basis of the study. The laboratory work consists of constant practice in the preparation and purification of typical organic compounds.

No attempt is made to cover the entire range of carbon compounds; but the simpler fatty and aromatic compounds, their chemical behavior, and the characteristic reactions and relationships of the different classes of organic compounds are discussed, and the synthetic methods considered by which they can be obtained.

ADVANCED ORGANIC CHEMISTRY AND ORGANIC ANALYSIS.

The study of organic chemistry is resumed in a course of lectures on special chapters of the subject, preparation of the more difficult organic compounds and proximate and ultimate analysis. Attention is paid to those parts of the subject which have a technical bearing, but the aim in all the work is to encourage in the student self-reliance, by which he can solve for himself problems which may arise in technical chemistry.

ASSAYING, METALLURGY, ETC.

The latter part of the course is devoted to assaying, metallurgy, gas analysis, sanitary and industrial chemistry, chemical physics, chemical theories, special research work, and to the preparation of a thesis.

ENGINEERING.

The work of the freshman year in the line of engineering is devoted to mechanical drawing and shop practice in carpentry, turning, and patterns.

Throughout the sophomore year, instruction is given in machine drawing from sketches, descriptive geometry, shopwork in forging, chipping, and filing, and in

elementary tool practice. Lectures and recitations on the principles of mechanism are followed by instruction in the mechanism of machine tools.

The course for the junior and senior years embraces kinematics, machine drawing, steam engineering, thermodynamics, mechanism of boilers, machine design, applied mechanics, engineering laboratory, strength of materials, and shop practice in higher forms of machine tool work.

Frequent inspection visits to manufacturing establishments are made, and the students are required to make reports thereon.

TUITION.

The tuition for the course in chemistry or in chemical engineering is \$60 per year, besides a laboratory fee of \$5 per term.

DEPARTMENT OF ARCHITECTURE.

[LOUIS J. MILLET, Director.]

For the purpose of establishing in Chicago a full and thorough course of study in architecture an alliance has been formed between Armour Institute and the Art Institute, by which the former furnishes instruction especially in the scientific and mathematical branches and the latter in the artistic and technical work. The advantages of this union of interests will be apparent upon a consideration of the ample resources of the two institutions.

BUILDINGS.

The Art Institute is permanently established in the well-known Memorial Art Palace of the World's Columbian Exposition, situated at the foot of Adams street, and used during the Exposition as the meeting place for the World's Congresses.

The home of Armour Institute, at the corner of Armour avenue and Thirty-third street, is a magnificent fire-proof building of the most modern construction, five stories in height (above the basement), and furnished with every convenience that health, comfort, and the requirements of such an enterprise could dictate. Armour Mission, which is close at hand, affords a fine assembly room, with seating capacity for two thousand, and additional rooms in the same building are used by one of the departments of the Institute.

TECHNICAL EQUIPMENT.

The extensive and rare collections in the museum of the Art Institute, embracing not only pictures and sculptures, but also a great variety of objects of art embodying design applied to manufacture, such as Greek vases, metals, textiles, musical instruments, antiquities, furniture, etc., will be open to all students. Relating especially to Architecture are the architectural casts formerly belonging to the Chicago Exposition, and, far more important than these, the great Trocadero collection, the like of which does not exist elsewhere in America. This collection, which illustrates the architecture of France—Romanesque, renaissance, and modern—by the most magnificent examples, has been transferred from the World's Columbian Exposition to the Art Institute.

The Scientific equipment of Armour Institute is also placed at the disposal of the students in Architecture. It includes the physical and chemical laboratories, and the apparatus of the Departments of Electrical and Mechanical Engineering, much of which has a direct relation to architectural study. Moreover, the Institute is provided with a fine technical museum and a first-class gymnasium, which is free to all the students.

LIBRARIES.

The library of the Art Institute consists at present of thirteen hundred books and nineteen thousand photographs, all directly related to art. It contains about two hundred books and one thousand photographs closely connected with the subject of Architecture, and these will be increased as rapidly as possible. The complete collection of Braun's large carbon photographs of paintings and sculptures of all schools is peculiar to this library.

The library of Armour Institute, now numbering over ten thousand volumes, is especially rich in science, mathematics, literature, and history, and will be developed to meet the needs of the various departments.

LECTURES AND ENTERTAINMENTS.

Courses of lectures by well-known architects and literary men have been arranged by both institutions, to supplement the work of the class room and the studio. Students in the course in architecture will also be admitted to the general literary, musical, dramatic and art entertainments of the two institutions. There are also class lectures upon the history of painting, perspective, artistic anatomy, the history of sculpture, besides popular courses upon subjects relating to art.

SOCIAL LIFE.

The social life of the school will be fostered by the organization among the pupils of scientific, artistic, and literary clubs. It is believed that such organizations among the students themselves are important adjuncts to the symmetrical development of the scientist, the artist, and the scholar.

COURSES OF STUDY.

The regular course of study is four years in length, and resembles in all essential particulars the architectural courses of the highest professional schools. For some years the Art Institute has maintained a two years' course of study similar to the shorter courses of the schools of Boston and New York. This short course it is thought desirable for the present to continue.

DEGREES, DIPLOMAS AND CERTIFICATES.

A Diploma will be granted for the completion of either course, and a certificate of attainments for satisfactory progress in a special or a partial course. All degrees, diplomas and certificates of attainments will be given by the Chicago School of Architecture, under the seals of the Art Institute and Armour Institute.

REQUIREMENTS FOR ADMISSION.

The entrance examinations for 1895-96 will occur on the 12th and 13th days of September, 1895. Applicants for admission in *full standing* in the four years' course in Architecture must pass a satisfactory examination in one of the courses of the Scientific Academy of Armour Institute.

Applicants for admission to the two years' course are examined in arithmetic (through percentage and square root), algebra, plane and solid geometry, English (grammar and composition), and United States History.

TUITION.

The tuition for each course in Architecture is \$25 per term. There is also an entrance fee of \$2. Payments are due at the beginning of each term.

DEPARTMENT OF LIBRARY SCIENCE.

[Miss KATHARINE L. SHARP, Ph. M., B. L. S., Director.]

The course in Library Science at present consists of one year of technical training in the elements of each department of library work, and is designed to raise the standard of library assistants, and to prepare students for advanced work in this or other schools. No one will be taken for less than a year, as the subjects are studied in succession, and a knowledge of their relation to each other is considered essential. The work is planned to occupy forty hours a week. A second year of advanced and comparative work will be given in 1895-96, if there is sufficient demand for it.

REQUIREMENTS FOR ADMISSION.

Candidates for admission must be over twenty years of age, and have at least a high-school education or its equivalent. Special preparation should be made in history, literature and languages. All applicants, except college graduates, will be examined in general literature, history, and current events.

CATALOGUING.

In the fall term, cataloguing is taught according to the Library School rules, and students are required to catalogue independently a number of books after each lecture. This work is carefully revised by the instructor and returned, making a

sample card catalogue, which belongs to the student. In the winter and spring terms, the class is taught to modify the library school rules, and is given practical work on the Institute catalogue. Dictionary cataloguing is taught according to Cutter's rules, and the lectures are followed by practical work, each student making a sample catalogue.

CLASSIFICATION.

The Dewey Decimal Classification is used, and students are given many opportunities for independent work in the Institute and other libraries. No comparative study of classification is undertaken the first year.

REFERENCE WORK.

Lectures are given on reference books and the class has practical work in the Institute Library. Reference lists are also prepared for special classes and for the literary societies, and this independent work is considered the most important part of the course.

BIBLIOGRAPHY.

Bibliography is taught by means of lectures and problems, the object being to familiarize the students with the books described. Special bibliography is given by lectures from professors in the Chicago University, the Northwestern University, and Armour Institute.

ORDER DEPARTMENT.

The routine of this department is explained by lectures and practical work throughout the year. Each student studies trade lists and reviews, and visits book stores in order to make the purchase list required as an exercise each week.

ACCESSION DEPARTMENT.

The Library School rules are used in the technical work and lectures are given upon the administration of the department. Practical work continues through the year.

SHELF DEPARTMENT.

The Library School rules are used and supplemented by lectures. Each student is made responsible for a section of the Institute Library for practical experience.

LOAN SYSTEMS.

A comparative study of systems used in different types of libraries is made, with careful discussion of underlying principles, and most valuable comparisons are gained in the visits to other libraries. Each student in turn assists at the Institute loan desk.

BINDING.

Lectures are followed by visits to binderies, and by practice in preparing books for the bindery. Instruction in mending books is also given.

HISTORY OF BOOKS AND PRINTING.

Lectures are given by the President of the Institute and illustrated by the rare collection of old books belonging to the Institute Library.

VISITS.

Visits to other libraries are made in the spring term, when the students have become familiar with library methods. Each student is appointed to make a special study of some one department and report to the class at the general discussion which follows the visit.

APPRENTICE WORK.

Each member of the class acts as assistant to each member of the library staff in turn. Besides this, each one has to do a certain amount of office work each week. During the winter term, each student is also required to give some time each day

to the Institute in the work most needed, and in the spring term the apprentice hours are increased. Orders for outside work in cataloguing, organizing, bibliography, and writing are taken and given to the class for experience.

LIBRARY VISITS 1893-94

Chicago Public Library; Newberry Library, Chicago; University of Chicago Library; Scoville Institute, Oak Park, Illinois; Adams Memorial Library, Wheaton, Illinois; Northwestern University Library, Evanston, Illinois; Evanston Public Library, Evanston, Illinois; Gail Borden Public Library, Elgin, Illinois.

TUITION.

The tuition is \$60 per year. Incidental expenses for supplies and visits need not exceed \$25 per year.

DEPARTMENT OF DOMESTIC ARTS.

The Department of Domestic Arts affords instruction in the following subjects: Cooking, plain sewing, dressmaking, and millinery. Each of these subjects is pursued in a *technical* and a *special* course, the former being intended for those who desire professional training, while the latter is for general culture and development.

COOKING.

[Miss ISABEL D. BULLARD, Instructor.]

The instruction in cooking embraces three graded courses; each course occupies one term of twelve lessons and is complete in itself.

Object of courses.

The object of these courses is to familiarize the pupils with the most healthful, attractive, and at the same time, economical methods of preparing such articles of food as are found on a well appointed table.

Instruction is given in the preparation, cost, composition, and dietetic value of foods. Special attention is directed by the aid of carefully prepared charts, to the purchasing of meats, vegetables, and fruits. The instruction in the first and second courses includes all the fundamental principles of cooking and their application in the individual preparation of simple dishes, also the care of a kitchen and its appointments.

Instruction in the third course elaborates the principles previously stated; it includes the preparation of more complicated dishes, and the serving of a luncheon and a dinner. Special attention is given to table service and to the care of the dining room. All materials are furnished free of charge.

Invalid cooking.

A special course of lessons has been arranged for professional nurses and others who desire a theoretical and practical knowledge of cooking for the sick.

Chafing dish course.

A course of demonstrating lectures on the use of the chafing dish will be pursued independently of the other courses.

Courses of study.

First course.—Making and care of fire; care of kitchen and appointments; dish washing; measuring; the principles of boiling, steaming, stewing, baking, and broiling; the cooking of vegetables, eggs, cheese, soups, meats, biscuit, puddings, and sauces.

Second course.—Batters (muffins), etc.; doughs (doughnuts, bread, pastry, cake); desserts; puddings; sauces; frying (fish, etc.); roasting of meats and fowls.

Third course.—Salads; mayonnaise and French dressings; croquettes; entrees and sauces; game; desserts; frozen creams, ices, sherbets, etc.; fancy cakes, souffles; serving a luncheon and a dinner.

Lectures.

Lectures will be delivered throughout the course by the instructor in cooking.

A course of twelve lectures will also be given on "The Chemistry of Foods" by Prof. T. G. Allen of the Department of Chemistry of Armour Institute.

PLAIN SEWING.

[MISS HENRIETTA CONNOR AND MISS FLORENCE E. KENNEDY, INSTRUCTORS.]

Special course.

The Special Course in plain sewing comprises three terms of three months each. The lessons, which occur twice a week, are two hours in length.

Technical course.

The Technical Course is for those who wish to complete the work in plain sewing in three months. Recitations are held five mornings in each week. Written examinations are given in both courses at the end of each term.

Materials.

Materials for practice are furnished during the first term by the Institute. Other materials are furnished by the students.

Course of study.

First term (devoted to hand sewing).—Position of the body while sewing. Talk on the manufacture of the needle and the thimble. Study of materials. Basting and running. Overhand and back-stitching. Putting in gussets and making plackets. Gathering, stroking gathers, and putting on bands, chain-stitch, feather-stitch, and mitering corners. Patching. French hem on damask. Making button-holes in muslin, and sewing on buttons. Slip-stitching and blind-stitching. Mending and darning on cashmere, flannel, damask, and stockinet.

Second term (devoted to hand and machine sewing).—The student must be familiar with all the stitches used in hand sewing. A certain amount of sewing is required to be done at home. Study of materials. Taking measures. Draughting and making under garments. Grading and altering pattern for underwaist. Cutting and making underwaist. Cutting and making nightdress.

Third term (for those who desire to perfect themselves in fine hand and machine sewing).—Talk on the manufacture of cotton and linen. How to grade and alter patterns. Making children's dresses. Advanced machine work.

SPECIAL DRESSMAKING.

[MISS HENRIETTA CONNOR, INSTRUCTOR.]

This course is intended for those who desire to learn dressmaking for home use. It comprises three terms of three months each. The lessons occur twice a week and are two hours in length.

Requirements of admission.

Applicants must be at least sixteen years of age and possess a fair knowledge of hand and machine sewing.

Materials.

The materials used are selected and furnished by the student. The work cut and planned in the class must be finished at home. Each student is required to make a dress for herself.

Course of study.

First term.—Draughting and cutting skirt from measure. Hanging and finishing skirt. Cutting waist and sleeves from pattern. Trimming and finishing waist. Examination.

Second term.—First class (for those who desire to learn cutting and fitting from measure). Practice in taking measures. Instructions in draughting waists of various styles. Cutting and making plain waist. Matching and making striped or plaid waist. Examination.

Second class (for those who desire to perfect themselves in the use of patterns). Instruction in transferring patterns and diagrams from the various pattern-sheet supplements. Practice in taking measures. Grading and altering these patterns. Cutting and making fancy waists. Examination.

Third term (for those who have satisfactorily completed the first and second terms).—Talk on the manufacture of woolen textiles. Cutting and making princess dress. Talk on the manufacture and tests of silks. Cutting and making tailor finished dress. Examination.

TECHNICAL DRESSMAKING.

[Miss HAZEL KIRK, Instructor.]

The course in technical dressmaking comprises four terms of three months each. The instruction is daily, except Saturday, from 9 to 12 o'clock a. m., and from 2 to 3 o'clock p. m.

Requirements of admission.

Applicants must be eighteen years old and must pass a preliminary examination in plain hand and machine sewing. Examinations are also held at the close of each term.

Class work.

The classes are organized in September. Students provide all their materials during the first term; but they are permitted to take orders for work during the remainder of the course, for which they are allowed fair compensation. Each student is required to keep in a notebook an accurate record of class demonstrations; this record is inspected at stated intervals during the course.

Course of study.

First term.—Choice of materials. Measuring, draughting, cutting, fitting, and finishing a dress-skirt, waist, and sleeves. Cutting and matching striped materials for house-sacques and fancy waists. Practice in making buttonholes, eyelets, etc.

Second term.—Draughting continued. Matching of plaid materials. A princess dress of plain material and an empire gown are made during this term.

Third term.—The making of fancy waists and summer toilets. Tailor finish of gowns. Designing and making evening dresses and improved gowns.

Fourth term.—Description of the manufacture of cloth. Draughting, cutting, basting, fitting, finishing, and pressing jackets of various styles. Designing, cutting, fitting, and finishing tailor-made garments. Children's garments.

MILLINERY.

[Miss EMOGENE L. KENNEDY, Instructor.]

Requirements of admission.

Applicants for instruction in the courses of millinery are required to be sixteen years of age, and to be familiar with all kinds of hand sewing.

Branches of study.

These courses extend through three terms of twelve weeks each, and comprise instruction in the methods of making and covering buckram and wire frames; the making of all kinds of folds, facings, and edges used on the brims of hats; and the making and trimming of straw hats.

Materials.

The materials are furnished by the pupils. For practice work cheap colored velveteens and harmonizing shades of cheap ribbons are used in trimming. Pupils have the privilege of furnishing good materials for hats for themselves and their friends.

Order department.

After a thorough preliminary training the pupils are permitted to work for the Order Department, by which means experience is gained in making and trimming articles of millinery for the trade.

Course of study.

First term.—Study of color and textiles. Talk on the manufacture of felt hats. Study of forms and lines. Cutting paper pattern for buckram frame. Making and covering buckram frame. Making folds, fitted facings, full facings, and puffed edge. Making wire bonnet frame. Making velvet bonnet. Trimming in general. Examination.

Second term.—Study of form, line, and color. Talk on the use and care of feathers. Designing and making fancy cloth muff. Making fancy collars. Designing fancy crowns. Making turbans and toques. Making evening hats. Talk on mourning materials. Making mourning bonnet and veil. Making mourning hat. Talk on the manufacture of ribbons. Making bows and rosettes. Examination.

Third term.—Study of form, line, and color. Talk on the manufacture of straw hats. Making wire hat frames. Making straw hat. Fitted facings and folds. Shirred facings. Making shirred mull hat on wire frame. Making shirred hat on shirring wire. Making lace hat. Trimming with mull, crepe, and lace. Examination.

TUITION.

Cooking:

First course (1 lesson per week).....	\$5.00
Second course (1 lesson per week).....	5.00
Third course (1 lesson per week).....	10.00
Invalid cooking course.....	5.00
Chafing dish course (lectures).....	5.00

Plain sewing:

Technical course (daily).....	10.00
Special course (twice a week)—	
First term.....	5.00
Second term.....	10.00
Third term.....	10.00

Dressmaking:

Technical course (daily, including chart).....	20.00
Special course (twice a week)—	
First term.....	10.00
Second term.....	15.00
Third term.....	15.00

Millinery:

Technical course (daily).....	15.00
Special course (twice a week).....	10.00
Special course (once a week).....	5.00

DEPARTMENT OF COMMERCE.

[ISAAC S. DEMENT, Director.]

A comprehensive scheme of practical education must include the training and equipment of young men and women for mercantile pursuits. Although the entrance to a successful business career is wider to-day than ever before, competition—as sharp in commercial as in professional life—places the uneducated person at an immense disadvantage. The realization of this fact has led to the establishment in Armour Institute of a Department of Commerce, in which instruction will be given in shorthand, typewriting, penmanship, correspondence, business forms, bookkeeping, commercial law, commercial geography, mathematics, English, French, German, Spanish, and history. The work of this Department is arranged as follows:

I. The Courses in Shorthand, Typewriting and Bookkeeping.

II. The Commercial Course.

Until further announcement only Group I will be taught.

I. COURSES IN SHORTHAND AND TYPEWRITING.

The instruction in shorthand and typewriting occupies two years, but is divided for convenience into three courses, which also include mimeographing, letterpress

work, composition, spelling, and a short course in bookkeeping. Students are encouraged to choose additional studies from the Commercial Course, or from the courses of the Scientific Academy when such an arrangement does not interfere with their progress in shorthand. The advantage of this is at once seen by those who are aware of the large demands which are now laid upon private secretaries and reporters. Besides, the recreation afforded by these additional studies fully compensates for the time devoted to them.

The first course is two terms in length, and is designed to qualify the student to discharge the duties of a private secretary or a shorthand amanuensis.

The second course is one year in length, and is designed to prepare the student to become a teacher of shorthand and typewriting.

The third course is two years in length, and is designed to qualify the student for general or technical reporting, including the reporting of suits at law, references, debates, arguments, speeches, technical lectures, and meetings of all kinds; also newspaper and special reporting.

II. COMMERCIAL COURSE.

The Commercial course will occupy two years, and is designed to fit for active business life those who are compelled to forego a full collegiate education, or who prefer the immediate and practical advantages which this course gives them. The curriculum embraces all the studies mentioned above except shorthand and typewriting. The requirements for graduation include one foreign language.

EXAMINATIONS.

The examinations for admission to the Department of Commerce will be held on the 1st and 3d days of July and the 12th and 13th days of September, 1895. Applicants will be required to pass a satisfactory examination in the studies of the grammar grades of the public schools.

TUITION.

The tuition for the courses in Shorthand and Typewriting is \$25 per term. The Institute furnishes typewriting machines; text-books and stationery are furnished by the pupils.

The tuition for the regular course in bookkeeping is \$25 per term.

Special instruction in Spanish is offered at \$10 per term.

DIPLOMAS AND CERTIFICATES.

Diplomas will be awarded, under the seal of the Institute, for the satisfactory completion of a course in the Department of Commerce. Students taking selected studies will receive from the Institute a certificate of work accomplished.

DEPARTMENT OF MUSIC.

[OTTO W. G. PFEFFERKORN, Director.]

PIANOFORTE.

The course of instruction will embrace all grades.

The various forms of "technique" will be acquired, rather by judicious elementary exercises (easy to read and commit to memory), than by time-consuming "Études." A sufficient number of the latter, however, will be used in illustration and application of technical specialties.

The time thus saved will be spent to better advantage on the study of classical works, such as the Inventions, Preludes, Fugues and Suites of Bach and his contemporaries; and the Sonatinas, Rondos, Variations, Sonatas and Concertos of Haydn, Mozart, and Beethoven.

The Romantic and Modern Schools will also receive due attention; in selections from Mendelssohn, Weber, Schumann, Schubert, Chopin, Liszt, Rubinstein, Brahms, Saint Saens, Grieg, and other recent composers.

VOICE CULTURE AND THE ART OF SINGING.

"There is no royal road to the art of singing."

Attention will be given, first and foremost, to the proper emissions of the voice. Correct intonation; perfect formation of the vowel sounds; clear articulation and

enunciation of words; proper phrasing and the cultivation of an artistic style in singing, will all form a part of the instruction given.

The best examples of Italian, German, English and American vocal music will be used, and will cover a wide range, from simple songs to oratorio and operatic selections.

Physical and breathing exercises, under the direction of a special teacher, will form an imperative adjunct to this course.

For the benefit of those not proficient in reading music at sight, special instruction will be given in this branch.

ORGAN.

Students who have a rudimentary knowledge of music and pianoforte playing can be received as students of the organ.

The following outlines briefly the course of instruction: (1) The mechanism of the organ; (2) the tone quality of the various "stops" or "registers," both singly and in combination; (3) the art of pedal playing; (4) accompanying; (5) the duties of a church organist; (6) solo playing (church or concert).

VIOLIN.

The following is a synopsis of the course: Ries School, Parts I and II; Kayser Etudes; Technical Exercises, Schradieck; 40 Etudes, Kreutzer; 24 Caprices, Rode; Gradus ad Parnassum, Dont; 24 Etudes, Paganini.

With these technical studies will be interspersed the easier concert pieces of de Beriot, Dancia, Weidig; Airs Russes of David, the Concertos of Rode, Viotti, Kreutzer, de Beriot, Spohr, Mendelssohn, Bruch, Wieniawski, Joachim, and selections from other composers.

An especial feature here will be the "Ensemble Classes," the value and importance of which cannot be overestimated. The privilege of attending these classes, for the study of chamber music, is accorded to each student sufficiently advanced.

COMPOSITION.

Harmony, Counterpoint, Canon and Fugue, Instrumentation and Orchestration, Form, History of Music, Acoustics and Temperament will be taught individually or in classes. Candidates will be prepared for any musical examinations.

Students living at a distance can receive their instruction in this branch by correspondence.

CHORUS CLASSES.

An elementary course in reading and singing from notes at first sight will precede the study of part songs.

LECTURES AND RECITALS.

During the current year will be given lectures upon musical history, theory and biography; concerts and recitals by members of the faculty, and pupils' recitals, in which students of various grades will participate.

TUITION.

[Ten weeks, one private lesson per week.]

Piano:		Voice:	
First division	\$5.00	First division	\$12.50
Second division	7.50	Second division	20.00
Third division	15.00	Flute	12.50
Organ	15.00	Mandolin	15.00
Violin	20.00	Cornet	15.00

In all branches special rates are made for classes. Private lessons, thirty minutes; class lessons, one hour. For more detailed information address the Director.

NORMAL KINDERGARTEN DEPARTMENT.

NORMAL COURSE, 1894-95.

The Chicago Free Kindergarten Association, affiliated with Armour Institute and constituting its Normal Kindergarten Department, aims to train women for the

education of children according to the truest principles. The necessity for a complete and harmonious development of the child nature has become so generally recognized that a thorough study of the objects pertaining to this end must soon constitute an essential part of the education of every woman.

The Free Kindergarten Association has had many years of valuable experience in practical and intellectual lines of work, and therefore offers to its students exceptional advantages, which in brief outline are indicated in this circular.

Requirements for admission.

Classes are organized on the second Monday in September. Applicants are received during this month.

All applicants for admission to the normal and training department should be at least nineteen years of age; no applicant under nineteen years of age will be received unless by special permit of the board of directors of the association. Every applicant must give satisfactory evidence of good health, moral character and of such culture as is requisite for a proper standing with the profession and the public.

Applicants who have completed a thorough high school, collegiate or university course are preferred, but a good common school education is an imperative requirement. It is difficult to define the exact educational requisites for a successful kindergartner. Love of children and an ability to understand and meet their necessities may, to some extent, supplement the lack of higher educational qualifications, but all applicants must have a general knowledge of physiology, the natural sciences, history, literature, rhetoric and composition. In view of the above fact, the association will receive teachers on trial for one month before enrolling their names as members of the class. This plan is deemed just for all concerned; for, while only such teachers as will make successful kindergartners, in every way qualified to be a blessing to the children and an honor to the cause, are desired, on the other hand, it is not desirable that any student should spend a year in the effort to acquire knowledge of a profession for which she may have no natural fitness.

Examinations.

Entrance examinations for the September class will be held at Armour Institute, September 7, 1895. This examination will include General Physics, Questions upon Physiology, Botany, Zoology, Geometry, History, and Literature.

Lectures.

Lectures will also be given each month by eminent specialists.

COURSE OF INSTRUCTION.

First year.

Six weeks' work in Physiological Psychology, deducing therefrom some of the fundamental principles of Froebel's educational system.

Principal text-books.—Carpenter's Mental Physiology, James's Psychology (abridged form), Ladd's Outlines of Physiological Psychology.

Gifts.—First, second, third, fourth, fifth and sixth. In connection with building gifts, Ruskin's Stones of Venice, and other books of reference, varying with the need.

Occupations.—Perforating, Drawing, Sewing, Weaving, Folding, Cutting, Paper and Slat interlacing.

Essays written on each subject.

Delsarte.

Second year.

Gifts.—Tablets, Sticks, Rings, and Lentils. Books consulted: Stewart's Evolution of Decorative Art; Essays of Ruskin and Emerson.

Games.—Works on Anthropology consulted.

Stories.—Clodd's Birth and Growth of the Myth; Miss Buckland's Use of Stories in the Kindergarten; extracts from various sources.

Occupations.—Peas work, Cardboard Modeling, Clay Modeling, special work in Color and Design.

History of the Philosophy of Education as a basis for the special study of Comenius, Rousseau, Pestalozzi and Froebel; several histories used as text-books; study made of Emile, Leonard, and Gertrude.

Mutter and Kose-Lieder—Education of Man.

Program work.—Essays written on each subject.

Parallel with the second year's course, instruction is given in Vocal Music, Natural Sciences, General Principles of Biology, Physiology, and Psychology.

The music department is under the direction of Miss Mari-Ruef Hofer.

All students are expected to practice in the Kindergartens under the supervision of the Association during the entire course.

Instruction in Physical Culture and Music is given to all the classes.

Students are expected to attend the indicated course of lectures.

Special lectures and entertainments at the Institute, as well as the privileges of its Library, Gymnasium and Art Rooms, are open to the students.

DIPLOMAS.

Diplomas, bearing the seals of the Association and the Institute, will be granted to all students who have satisfactorily completed the entire course, passed the required examination and given evidence of ability to conduct a Kindergarten.

Expenses, including the cost of material, music, etc., need not exceed \$25 per year.

Applications should be made in person or by letter to the Chicago Free Kindergarten Association, Armour Institute.

OFFICE HOURS.

Monday, Tuesday, Thursday, and Friday from 11 to 12 a. m.; Wednesday, from 2 to 4 p. m.

A list of the names and location of twenty-two Kindergartens under direction of "the Association," which follows in the Catalogue, is omitted.

BOARD OF DIRECTORS OF THE KINDERGARTEN ASSOCIATION.

Mr. H. N. Higinbotham, President, 2838 Michigan Avenue; Mrs. L. B. Stephens, 2713 Prairie Avenue; Mrs. A. P. Kelley, 2244 Calumet Avenue; Mrs. M. H. Wilson, 2917 Michigan Avenue; Mrs. J. G. Milligan, 2957 Indiana Avenue; Mrs. William Shufeldt, 2244 Calumet Avenue; Mrs. Thomas Kent, 3203 Calumet Avenue; Mrs. A. C. Bartlett, 2720 Prairie Avenue; Mrs. M. H. Wilson, 2917 Michigan Avenue; Mr. Richard Nash; Mr. William E. Kelley, 2129 Calumet Avenue; Dr. Joshua Smith; Mr. Thomas C. MacMillan, 816 West Adams street; Mr. H. M. Sherwood, 2118 Michigan Avenue. Mrs. L. A. Hagans, Corresponding Secretary; Mr. Richard Nash, Secretary; Mr. W. E. Kelley, Treasurer.

The following members have been added to the Association this fall: Mrs. William H. Cunningham, Mrs. George S. Severance, jr., Mrs. J. F. Hervey, Mrs. Durkee, Mrs. Horace Martin, Mrs. Barger, Mrs. H. Kohl.

CALENDAR OF ARMOUR INSTITUTE, 1894-95.

Fall term begins Thursday, September 20, 1894; Fall term ends Wednesday, December 19, 1894; Christmas vacation of two weeks.

Winter term begins Thursday, January 3, 1895; Winter term ends Wednesday, March 27, 1895; Easter vacation of one week.

Spring term begins Thursday, April 4, 1895; Spring term ends Wednesday, June 19, 1895.

The following holidays will also be observed: Thanksgiving Day, Lincoln's Birthday, Washington's Birthday, Decoration Day.

For further information address the Dean of the Faculty, Armour Institute.

LIST OF DIRECTORS AND FACULTY OF ARMOUR INSTITUTE.

Directors.—Philip D. Armour, J. Ogden Armour, William J. Campbell, Philip D. Armour, jr., John C. Black.

Organization.—F. W. Gunsaulus, D.D., President; Thomas C. Roney, A. M., Dean of the Faculty.

Scientific Academy, Technical College.—I. Department of Mechanical Engineering, Frank C. Hatch, Sc. D., Director; II. Department of Electricity and Electrical Engineering, Wilber M. Stine, M. S., Ph. D., Director; III. Department of Chemistry and Chemical Engineering, James C. Foye, Ph. D., LL. D., Director; IV. Department of Architecture, Louis J. Millet, Director; V. Department of Library Science, Miss Katharine L. Sharp, Ph. M., B. L. S., Director. Department of Domestic Arts, Miss

Isabel D. Bullard, Acting Director. Department of Commerce, Isaac S. Dement, Director. Department of Music, Otto Pfefferkorn, Director. Department of Kindergartens, Miss Eva B. Whitmore, Director.

FACULTY.

[FRANK WAKELEY GUNSAULUS, D. D., President.]

The Technical College.—Thomas Conant Roney, A. M., Professor of English Literature, and Dean of the Faculty; Frank C. Hatch, Sc. D., Professor of Steam Engineering, and Director of the Department of Mechanical Engineering; Wilber M. Stine, M. S., Ph. D., Professor of Electricity, and Director of the Department of Electricity and Electrical Engineering; James C. Foye, Ph. D., LL. D., Professor of Chemistry, and Director of the Department of Chemistry and Chemical Engineering; Louis J. Millet, Professor of Architecture and Design, and Director of the Department of Architecture; Miss Katharine L. Sharp, Ph. M., B. L. S., Professor of Library Economy, and Director of the Department of Library Science; Victor Clifton Alderson, A. M., Professor of Mathematics; Louis C. Monin, Ph. D., Professor of Modern Languages, and Instructor in Logic; Albert B. Porter, B. S., Professor of Physics; Thomas Grant Allen, M. A., Associate Professor of Chemistry; Miss May L. Bennett, A. B., Associate Professor of Library Economy, and Assistant Librarian; Walter F. Shattuck, B. S., Associate Professor of Mathematics and Construction; Abram M. Feldman, B. S., M. E., Associate Professor of Mechanism; Truman P. Gaylord, B. S., Associate Professor of Electricity; Henry Barrett Learned, A. M., Instructor in History and Civics; William K. Fellows, Ph. B., Instructor in Designing and Drawing; John D. Young, Instructor in Assaying and Metallurgy, and Curator of the Technical Museum; Peter S. Dingey, Instructor in Wood Working and Foundry Practice; Edward D. Agle, Instructor in Machine Tool Work; Miss Jessie S. Van Vliet, Instructor in Library Economy, and Assistant Librarian; Miss Mary G. Hess, Instructor in Decorative Designing; Miss C. D. Wade, Instructor in Water Color; Miss Pauline A. Dohn, Instructor in Freehand Drawing; David Gorrie, Instructor in Forging; David Layton, B. S., Instructor in Mathematics; William Craig, Instructor in Gymnastics; Miss Margaret Mann, Library Assistant; Miss Irene Warren, Library Assistant; Samuel S. Posey, B. S. in C. E., Assistant in Drafting; John C. Snow, Assistant in the Electrical Laboratory; Alfred Weller, Electrical Mechanician.

The Scientific Academy.—Professor Roney, Director, and Instructor in English; Professor Alderson, Instructor in Mathematics; Professor Foye, Instructor in Qualitative Analysis; Professor Monin, Instructor in Modern Languages; Associate Professor Allen, Instructor in General Chemistry; William H. Runyon, A. M., Instructor in Physics; Miss Rosa C. Lang, Instructor in German; Henry Barrett Learned, A. M., Instructor in History and Civil Government; Miss Margaret W. Morley, Instructor in Biology; Miss Carrie Wright, A. B., Instructor in Latin; David Layton, B. S., Instructor in Mathematics; William J. Bowen, A. B., Instructor in Mathematics.

The Department of Domestic Arts.—Miss Isabel D. Bullard, Instructor in Cooking; Miss Henrietta Connor, Instructor in Dressmaking; Miss Florence E. Kennedy, Instructor in Plain Sewing; Miss Hazel Kirk, Instructor in Technical Dressmaking; Miss Emogene L. Kennedy, Instructor in Millinery.

The Department of Commerce.—Isaac S. Dement, Director; Mrs. Belle F. Dement, Principal; Pitt SoRelle, Instructor in Shorthand; Miss Frances G. Porter, Instructor in Typewriting; Mrs. Julia Mexia, Instructor in Spanish; Mrs. Dwight S. Dow, Instructor in Bookkeeping.

The Department of Music.—Otto W. G. Pfefferkorn, Director, Pianoforte, Organ, and Composition; Mrs. Nellie Bangs Skelton, Pianoforte; Herman Walker, Voice Culture and Choral Singing; Theodore Spiering, Violin; Herman Diestel, Violoncello; John Skelton, Cornet; Elias A. Rivkin, Flute; I. Tomaso, Mandolin.

The Department of Kindergartens.—Miss Eva B. Whitmore, Director, and Instructor in Occupations; Miss Anna E. Bryan, Principal Normal Class, and Instructor in Theory and Gifts; Miss Margaret Morley, Instructor in the Natural Sciences and Physical Culture; Miss Marie-Ruef Hofer, Instructor in Music.

Lecturers.—The Technical College: F. W. Gunsaulus, "The History of Printing;" William A. Otis, "The History of Architecture;" George L. Schreiber, "The History of Art;" W. S. MacHarg, "Sewerage and Ventilation;" Irving K. Pond, "Theory of design;" W. L. B. Jenney, "Construction;" Miss Edith E. Clarke, "Dictionary Cataloguing;" Geo. E. Wire, "Binding and Library Economy;" Miss Lutie E. Stearns, "Reading for the Young." The Department of Domestic Arts: Thomas Grant Allen, "The Chemistry of Foods." The Department of Kindergartens: F. W. Gunsaulus, "Education and Christianity;" Thos. C. Roney, "English Literature;" Miss Katharine Sharp, "The Use of Books."

III.

THE JACOB TOME INSTITUTE.—THE STORY OF A NOTABLE EDUCATIONAL EXPERIMENT.

PRELIMINARY WORDS.

The little Maryland town of Port Deposit, is situated on the Susquehanna, where the broadening stream of that mighty river,—pouring down from far off mountain fastnesses and flowing through long reaches of forests to the lower lands where for many a peaceful mile, it lies between fair fields of grain and grassy meadows, at last nearing the Sea,—seems, in its vastness, like the arm of some great Bay stretching inland from the Ocean, rather than a mere river.

The unruffled surface of its broad expanse at this junction of river and bay; where, abreast the town, it sleeps like some placid lake all the long Summer, and gives back through sunlight and starlight, the ever changing beauty of the bended heavens, would seem to preclude any idea of the exhibition of turbulent power; but, in early Spring, when the chains of Winter are broken and the ice begins to move, this fair stream simultaneously with the giving way of the ice gorges above, is transformed to a wintry torrent, with the seaward rush of the long-imprisoned waters which far out-burst their banks and pile up great ice boulders ashore to mark their track; then, the angry waves sweep through the single street of the town with a tumultuous rush of waters.

Port Deposit, wedged in between the water and the cliff, is literally a child of the river. First, in its early days, there was held, on the narrow beach at the foot of the lofty cliff, the marketing of the immense rafts of logs, the spoils of the upland forests of pine. A little space for shelter was hollowed out of the massive rocks of the cliff, and the foothold thus secured was held of great value; for here, was the business centre of all the surrounding country, and here was situated the Bank; the storehouse of the money essential to the carrying on of the great lumber business.

As time passed the almost illimitable forests of the upper river, which had seemed well nigh inexhaustible, were devastated; and this once immense business dwindled. About the same time the building of railroads had changed business centres, and the little town became of relatively less importance to its surrounding country; but, when the water failed to sustain them, these enterprising people turned to the land; and, from the immense barriers of rock built by Nature to buttress the highlands and hold back the encroaching stream, they blasted great masses of stones, used far away in constructing national fortifications and in engineering works; while from the quarries opened in the great seams of granite, they took fine building stones; so that they still kept actively and prosperously in touch with the world of business in populous towns and cities.

Among the inhabitants of this little town through all these years of its active business prosperity and through all its changing vicissitudes,

for four score and more years, a single citizen, pursued with industry and economy, his vocations; until, at length, he came to be recognized as one of the most enterprising and prosperous of its citizens; and, in 1896, is still the trusted Banker of the place and vicinity.

As has occasionally happened among the business men of many another American town and city, this devoted man of business, whose whole life seemed given to the piling up of wealth, and who doubtless, to many of his associates, seemed careful only of his own interests, was, in reality, all his life long, cherishing an ideal, and keeping steadily in view the hope of the realization of an early dream!

It is the final realization of this ideal, wisely made in his own lifetime, which now gives to this Maryland town, the scene of his life-work, its greatest present claim upon the interest of the world.

The town is, however, in itself well worthy the attention of the landscape loving tourist, by reason of its singular situation and unusual picturesqueness, recalling, as it does in miniature, the vine-clad terraced mountain sides which look down upon Lake Como, and stir the hearts of wondering wanderers from the North, rejoicing in the balmy airs of Italy, and taking rare delight in the ever new surprises of beauty revealed by every turn in the narrow winding lake, which lies, a ribbon of silver carelessly thrown amidst the hills; or, rather, like a mirror framed in by the lofty mountains rising abruptly from its surface. Mountains and lake, forests and vineyards, blending in scenes of romantic beauty never to be forgotten!

Port Deposit, lies outside the main lines of American travel and so escapes the admiration of gregarious throngs of idle tourists.

The town consists of a single street running along by the river side, and the space for the houses against the lofty overhanging cliff has been literally blasted out of the rock; while the solid stone piers and substructions of the few costly houses,—evidently needed to prevent their being swept away by the spring floods when the ice gorges give way up stream,—recall the solid construction of the mediæval fortress-palaces of stone in Turin, Genoa, Florence and Rome, whose massive walls of masonry were planned to resist a like on-rush; only, in those turbulent cities, it was to guard against the attack of invading foreign foes; or the equally dangerous assaults of the armed adherents of Domestic Factions.

A few hundred feet above the river, a rolling plain sweeps by gentle acclivities, to the very edge of the precipitous cliff which here fronts the stream, and offers, it would seem, most desirable sites for the erection of important buildings; but it was the wish of this man, whose purpose was to be of lasting benefit to the children of those who live by the water's edge, and among whom his whole life had been spent and his wealth accumulated, to build his building among the homes of his fellow townsmen and nigh to his own dwelling; and so, in accord with his wish, it has been erected. It is a pleasing, dignified, substantial structure of brick and stone; with such a solid substruction of granite blocks, as would seem able securely to bid defiance to the occasional Spring freshets.

The unusual situation of this noble building arouses the curiosity of one who sees it for the first time, which the peculiarities of the town, arising from the exigencies of its striking position betwixt mountain and stream, also pique; while the courtesies shown to a visiting stranger by the inhabitants generally, and the interest attaching to an interview with the venerable philanthropist, now in his 80th year, who has so admirably carried out his wish to place

the opportunities for a good education in reach of the poorest child, all make such a visit memorable; so that, before proceeding to give the formal account of this unique educational institution which here follows, it has seemed well worth while to endeavor to describe its situation and surroundings; as, also, to show how its origin lay in the heart of a man of the people, who long desired thus to give to others, while yet children, greater advantages of education than were open to himself in his early life.

A noble purpose and grandly achieved!

It is to be hoped that the citizens, whose children are to enjoy these unusual advantages so bountifully offered, may appreciate their value to those children; as well as the advantage to any Community of the addition to its society of such a body of cultured men and women, as must needs compose the Faculty of such an educational institution. Possibly, in thus giving to a small community such a desirable addition to their citizens, Mr. Tome has "builded better than he knew." In this respect, the founding of the Institute is certainly an obvious gain to the intellectual and social resources of the town. It is significant to see how the interest taken by the Founder, in these schools of his creation, add zest to his daily life; so that, in observing his alert interest in all that pertains to their welfare, his real age is lost sight of; for he seems more alive and vigorous than many a man, younger than himself by a score or more of years. Such giving is "twice blest. It blesses him that gives, and him that takes."

THE JACOB TOME INSTITUTE, PORT DEPOSIT, CECIL COUNTY, MARYLAND.

This Educational Institution, while as the creation of a single public spirited citizen it resembles the several institutions founded in like manner which have been already recorded at length in this Report, is, in some respects, "*sui generis*," and, as such, I have spoken of it as "an Educational experiment." In the active and continuous interest taken in its welfare and development by Mrs. Tome, the estimable wife of the Founder, it enjoys like good fortune to that of the Leland Stanford University, of California, wherein Mrs. Stanford has ever exerted so marked an influence for good.

In creating this memorial of himself in his home town, Mr. Tome provided: first, for the education of the orphan children in the town; second, for those in the county; and, lastly, for those in the State. He seemed to have had first in his thought, those poor children who, deprived of their natural protectors, are in especial danger of suffering from neglect, and to have first made such provision as should secure to that class of children the advantages of this new school. It will be seen, however, that the opportunities to be offered by this new institution were by no means to be limited to any single class of children.

Following the example set by Mr. Cooper, Mr. Pratt, Mr. Drexel, and Mr. Armour, Mr. Tome began by erecting an imposing and substantial building, carefully planned with all requisite facilities for giving thorough training in the elements of Science and of the Industrial Arts.

In addition to the building, with its very complete equipment, the Institute possesses a money endowment amounting to nearly a million and a half of dollars. The salaries of the instructors are paid

from the income of this endowment, but many incidental expenses are met by Mr. Tome, whose course in this matter of continuous personal generosity is like that of Mr. Clark who founded and continues the "Clark University," in Worcester, Massachusetts.

Mrs. Tome, who holds the position of President of the Board of Trustees, devotes herself, and her purse, unreservedly to the interests of the Institute. She has personally founded and supports the Library, Kindergarten, and Primary School attached to the Institute.

It will be seen from the statements which follow, taken from the official catalogue, that thus in this single Institute, an entire public school system of a town is embodied, as no tuition is paid by the pupils, and all requisite text-books and supplies are furnished them without cost. Such being the case, one is not surprised to learn that practically this Institute has taken the place of the Public Schools in Port Deposit; while the catalogue shows that, in the higher classes, many pupils attend from neighboring towns and settlements.

It is in this feature of supplying free instruction in all grades, from Kindergarten to High School, combined with such complete equipment for giving instruction in Natural Science in all its departments, that this Institute stands somewhat in a class by itself. It is, in fact, the only instance known to the writer where a single individual citizen has provided an entire public school system for a community; and, in this respect it may properly be termed an "experiment."

When the building and undertaking had sufficiently progressed, Mr. James R. Campbell, was called from Pratt Institute, in Brooklyn, to undertake the organization of the new enterprise as Director, and to set it in practical operation.

The school was opened for pupils in the autumn of 1894, with a teaching force of eighteen; exclusive of the Director, and other officials of the Institute, and of the building. During the first year, there was an enrollment of nearly five hundred pupils. In 1896, the teaching force has been increased to twenty-one, and there are over five hundred pupils in attendance.

The school is modelled after the Training School attached to the Teachers' College in New York City, known as "The Horace Mann School," which is designed for the training of teachers in practical work, as well as for the instructing of pupils; and embraces all grades from the Kindergarten, up to, and through, the High School.

Tome Institute, comprises, then, a Kindergarten, with a course of one year for the youngest children; a Primary School, with a course of three years; a Grammar School, with a course of five years; a High School, with a course of three years; with a proposed "Post-graduate course," of one year.

The following description of the building has been kindly furnished. It would appear from the fact that this is entitled "Building No. 1" that the Founder planned to erect other buildings, as the need for them may arise. A fine photograph of this handsome building adorns the catalogue of the Institute.

Building No. 1 is 119 feet by 80 feet, 3 stories and high basement. Up to the first floor the material is Port Deposit granite, above, pressed red brick of best quality with granite trimmings. The whole construction is massive and beautiful, and as fire-proof as a building not all iron and masonry can be made.

The cornice, peaks, and buttresses are sheathed with copper. Within, the general plan is broad and high hall ways running the length of the building, with class rooms opening on them and ending in broad stairways at each end of the building.

The Manual Training Shops are in the basement, where are, also, spacious furnace

rooms and a lunch room. There is, on the second floor, a well equipped biological laboratory; and on the third floor a large chemical laboratory, a sewing room, a constructive drawing room and an art studio. All these laboratories and rooms are well furnished and equipped. On the first floor, in addition to five class rooms, there is a large assembly room, a library and reading room, a supply and book room, a room for the Kindergarten, and one used as the Office of the Institute.

On the second floor are eleven class rooms, an apparatus room, a teachers' room and the biological laboratory.

The origin, purpose and methods of this Institution, created by the energy and benevolence of a single public spirited citizen, are so well set forth in the Catalogue,* that it is here freely quoted; while the programmes of the instruction in those studies which are germane to this Report, are given in full. The programme of the Science Courses, is given in the catalogue at similar length; but this, of necessity, is mostly omitted here.

The Catalogue is a well printed pamphlet, illustrated with a portrait of the Founder, and a view of the handsome commodious Building of the Institute.

The following extract, in which the purpose of the Institute is concisely stated, is from the "Certificate of Incorporation" with which the catalogue opens:

Second. The corporate name of the Corporation shall be, THE JACOB TOME INSTITUTE OF PORT DEPOSIT, CECIL COUNTY.

Third. The objects and purposes of said Corporation shall be the creation and maintenance in the town of Port Deposit, in Cecil County aforesaid, of a school or Educational Institution for the free education or instruction of white children, both males and females, between the ages of ten years and eighteen years, and furnishing for their use, free of charge, books, apparatus, specimens, instruments, implements and machinery, such as shall be necessary and proper for their education, and for fitting them for usefulness in life; the erection of suitable buildings and structures, the employment of competent officers for the management of the affairs of said Corporation and of fit and suitable instructors, teachers and assistants to govern and instruct said children, and to do all other things necessary and proper for the thorough and practical education, but not for the boarding or clothing of the children admitted to said school or Educational Institution; and the education or instruction above mentioned may include, at the discretion of the Trustees having the management of the concerns of this Corporation, not only the studies usually pursued in schools for children of the ages hereinbefore named, but also manual training, the use of tools and machinery, operating the same by means of steam, electricity or other forces, the working of metal, wood and other substances, telegraphy, short hand writing, typewriting; also, drawing, designing and engraving by or upon wood, copper or steel, sewing, cooking, and other domestic or useful arts.

In admitting children to said Educational Institution preference shall be given first to the children of persons who have died while residents of Port Deposit aforesaid, the children being at the time of their admission and having been for one year next prior thereto residents of Port Deposit aforesaid.

Following the legal documents from which the above paragraphs are taken, come the three pages here given, descriptive of the origin, purpose, methods and appliances of the school.

FOUNDATION.

The Jacob Tome Institute of Port Deposit, Md., has been established by the Hon. Jacob Tome as a token of his appreciation of the value of education, and of his desire to extend the benefits of both special and general training. It is hoped that the school which bears his name will be a fit memorial of his worthiness, and that the unfaltering integrity, industry, thrift, and the coolness and clearness of judgment which have marked his career may be among the qualities of character imparted by the Institute to its pupils.

* Catalogue Jacob Tome Institute 1895-'96. Port Deposit, Maryland. Pp. 64.

INCORPORATION.

The certificate of incorporation of Tome Institute bears date of May 20, 1889, and is signed by Evalyn S. Tome, John A. J. Creswell, W. J. Jones, H. C. Nesbitt, Samuel C. Rowland, John M. McClenehan, Thomas C. Bond, R. C. Hopkins, P. E. Tome. The board thus incorporated elected the following officers: Mrs. Evalyn S. Tome, president; General John A. Creswell, vice-president; Hon. Jacob Tome, treasurer; Thomas C. Bond, Esq., secretary. Vacancies having been caused by the lamented decease, first of General Creswell, then of W. J. Jones, Esq., the Hon. Jacob Tome and the Hon. W. W. Hopkins were elected to the board. Mr. Tome was subsequently appointed vice-president and reelected treasurer.

AIM.

The charter of Tome Institute provides for a plan of education comprising, in relation with literary culture, manual training, the development of mind through hand training, industrial training, the "preparation for any useful pursuit, however humble," technical education, "specific discipline required for excellence in a profession, however exalted, or in the practice of an art, however difficult."

DEPARTMENTS.

The kindergarten is the entrance to the academic department, because in its training are found the germinal principles of true curriculum and method.

Following the kindergarten, the primary school, three years, the grammar school, five years, and the high school, four years, complete the academic course.

The academic department, a course purely educational, is now being developed, on the principle that general training should precede special. It offers a scheme of elementary and secondary education of peculiar service to those who wish to prepare for scientific or technical or classical colleges, or for training in industrial art. It is hoped, also, to make this department the exponent of all that is wisest and best in precollegiate education, so that it may be a model school for teachers—in time, perhaps, a practice school for normal classes in general pedagogy, and for the training of teachers of form, drawing, and color, of manual training, and of kindergarten.

The library, now at the beginning of its development, has already demonstrated its value as an auxiliary to all lines of institute work. It is the laboratory for investigation in the literature of all subjects.

Of the departments above mentioned, the kindergarten, the primary school, and the library owe their origin to the influence of Mrs. Evalyn S. Tome, president of the board of trustees, and depend for their support upon her personal generosity.

METHODS AND FACILITIES.

The principle underlying the methods in vogue at Tome Institute is investigation and generalization at first hand by the pupil within the limits of his ability. It is more natural and easy to apply this principle where science, form, drawing, color, and manual training are made so prominent in the curriculum as at the Tome Institute; in fact, teachers of the central subjects are forced, when in competition with teachers of the above-mentioned studies, to alertness and ingenuity of method. In all studies, while the text-book is recognized as having a legitimate function, mere book work is strenuously avoided. From the first the pupil is trained to graphic representation, both constructive and freehand, and is encouraged to make his language expression more effective through his drawing. By such means, his interest and intellectual activity may be quickened at every stage of his school life.

All facilities in instruction will be provided as needed. A general apparatus room contains maps, globes, aids to mathematical teaching; a collection will further embrace models, pictures, and charts to illustrate botanical study, zoology, physiology, useful products of the earth, geography and history; and astronomical apparatus.

Facilities for the making of meteorological observations will be provided.

The biological laboratory is finely equipped for laboratory work in the natural sciences, fifteen Bausch & Lomb compound microscopes, and as many simple ones, an imported microtome, patent turn-table, fine scales and other instruments, affording exceptional facilities for individual work. Two manual training rooms, and as many constructive drawing studios, have the most approved furnishings and equipment.

Drawing models, material for form and color study, make a nucleus of studio equipment. Window boxes for class room plant study, sand tables for relief molding are, of course, included in the list of general educational apparatus.

In science, manual training, form, drawing and color, vocal music, inventional geometry, instruction is given either by or under the supervision of specialists.

In the higher grades, history, language, geography and mathematics are taught by special teachers.

Further developments of the course in manual training will include wood-turning, pattern-making, tin-smithing, forging, machine work.

For the girls no manual training course beyond the elementary grades has been provided. Eventually, sewing, hygiene and home-nursing, wood-carving, dress-making, household economy, millinery, will be introduced into the curriculum according to a proper educational sequence.

Facilities for using the stereopticon in the daily school work are provided.

During the summer of 1895 a convenient studio with north light was fitted up in the third story for the work in fine art.

Public lectures by specialists of note will be given in the assembly hall of the Institute.

The outline of the courses of study in the different departments, is given as follows:

OUTLINE OF KINDERGARTEN COURSE. *

General aim.—To develop each child in the totality of his nature, physical, intellectual, and spiritual, and to help bring him into harmonious relationship with nature, man, and God.

Subject.	Science.	Language and music.	Number.	Form.	Color.	Position and direction.
1st.—Emphasize the individuality of child. Call by proper name, assign a position at the table, develop muscles and senses.	Central thought—Preparation for Winter. Vegetable { Seeds of plants. { Falling leaves. { Buds on trees. World. { Animal { Caterpillars. { Insects. { Birds. { Squirrels. world. {	Language developed from the analysis of the children's own activity. Children trained to form complete sentences, pronounce correctly, and enumerate clearly.	Groups of 2 and 3. Use of 1 inch, 2 inches, 3 inches by measuring.	<i>Solid:</i> Sphere. Cube. Cylinder. <i>Plane:</i> Circle. Square. Compare with forms in nature.	Red. Blue. Yellow. Observe colors in nature.	Front, back. Up, down. Top, bottom.
2nd.—Family relationship. Underlying thoughts: 1. Love and care of parents for children. 2. Duty of children to parents. Animal and human families.	Harvesting of fruits and grains by the farmer, thus leading up to the Thanksgiving thought.	Finger-plays, fall and trade songs, Thanksgiving and Christmas songs, learned by rote.				
3rd.—Simple Thanksgiving celebration.						
4th.—Civic relationship. Underlying thoughts: 1. Interdependence. 2. Dignity of labor. We are led naturally from consideration of the farmer to that of the miller, baker, and other tradesmen, upon whom the children see they are dependent.						
5th.—Christmas as underlying thought—Love.						
State relationship. Underlying thought: Protection.	Simple weather observations. Preparation for the Easter thought—the awakening. Notice the melting of ice, bursting forth of buds, germination of seeds, return of birds, butterflies, ants and bees.	Language the same as during first term.	Groups of 2, 3, and 4.	Same.	Orange. Green. Violet.	Front, back. Up, down. High, low. Right, left. Vertical. Horizontal.
Ideal knights, heroes of other countries.		Learn patriotic airs and Easter songs.	Choice by the child of certain number, and judgment by him of the necessity for that particular number.	Compare curved and flat surface, curved and straight edges.		
Our knight, George Washington.						

Third Term.	All of our spring work comes under the head of science. We notice the effect of earth, water, air, and light upon plants and animals; classify flowers under color, form, and number; collect seed, assort and plant.	Same. Rote singing of spring songs.	Groups of 2, 3, 4, 5, and 6. Analysis and synthesis.	<i>Solid:</i> Square. Square prism. Oblong prism. Triangular prism. <i>Plane:</i> Oblong. Right-angle triangle. Equilateral triangle.	Tints and shades of the six primary colors.	Front, back. Right, left. Up, down. North, south. East, west. Vertical. Horizontal. Oblique.
Universal relationship. Family life on different parts of the globe, emphasizing. 1st, <i>Earth</i> .—Its universality, strength, nurture, life-giving power. 2nd, <i>Water</i> .—Universality, incessant activity from ocean to cloud, back to ocean again, its purifying, refreshing, nourishing, life-giving, and motive powers. 3rd, <i>Air</i> .—Its universality, invisibility, strength, and mobility. 4th, <i>Light</i> .—Its universality, warmth, light, and life-giving powers.						

* No course of study, in the school sense of that term, can be given for a Kindergarten.

CONSPICUOUS OF CENTRAL STUDIES.

KINDERGARTEN.

The songs and games of the Kindergarten introduce the study of natural science, stimulating the imagination, developing a sympathy with nature, and suggesting the highest ideals in thought and action.

The gifts form the basis of mathematical science, illustrating solid, surface, point and line.

The occupations apply the principles that underlie the gifts and cultivate a taste for the beautiful in form and color, training the eye and hand to work in unison with the mind.

Academic Department.

PRIMARY SCHOOL.

	Language.	History and literature.	Number work.	Geography.
First year	Oral lessons in reading; myths as foundation of literature and history; first lessons in writing and composition; memorizing and recitation of poetry; composition.	Through myth and story, emphasize recitation of good poetry.	Number combinations, notation, fractions and compound numbers presented objectively; drill in rapid figuring.	Connect with science study; concepts of direction, distance; location of places talked about; observation of local physical phenomena.
Second year	Reading; stories; observation lessons; composition; memorizing and recitation; spelling; common errors.	Stories of great men and events; heroic deeds; the meaning of national holidays; emphasize recitation.	Numbers, notation, fundamentals; simple problems; drill in rapid figuring.— <i>Walsh, Part I.</i>	As above—relative position of points of interest in school environment, in neighborhood; sunset; sunrise; directions; plants; animals; climate.
Third year	Reading; stories; observation lessons; composition; letter writing; reproductions, memorizing and recitation; spelling; common errors, dictations.	History in biography; important dates learned by association with events and persons. Stories of the homes, childhood, character of Longfellow, Whittier; memorizing and recitation of poetry.	Fundamental operations reviewed with exhaustive drill; compound numbers; fractions; decimals.— <i>Walsh, Part I.</i>	Molding and drawing school environment; concepts of geographical terminology, of structure islands, capes, etc.; place and time of rising and setting of sun; telling time by shadow; moon's phases; location of places in county, State, and country.— <i>Frye's Primary Geography.</i>

GRAMMAR SCHOOL.

	Language.	Reading, history, and literature.	Mathematics.	Geography.	Political science.
First year -----	English—First lessons. <i>Southworth and Goddard</i> . Much practice in composition, pronunciation, reading. French by conversation.	Reading— <i>Stickney's Fourth Reader</i> and supplementary reading. Literature—Talks and supplementary reading. History— <i>Montgomery's Beginner's History</i> as a reader; talks on general history.	Arithmetic, intermediate. <i>Walsh</i> .	<i>Frye's Primary. Frye's Complete.</i>	
Second year -----	English—Finish first lessons. Elements of composition and grammar. <i>S. G. to chapter 12</i> . Much practice. French—By conversation and writing.	Reading and literature—Supplementary reading; strive to give pupil the literary quality of what is read. History— <i>Montgomery's Beginner's History</i> as a basis of talks.	Arithmetic, intermediate. <i>Walsh</i> . Practical geometry.	<i>Frye's Complete.</i>	
Third year -----	English—Finish elements of composition and grammar. Much practice. German.	Reading and literature—Supplementary reading; literary study; connect with practice in composition; elocution; articulation; pronunciation. History— <i>Montgomery's Beginner's History</i> . Talks on general history.	Arithmetic, higher. <i>Walsh</i> . Practical geometry.	<i>Butler's Complete.</i>	
Fourth year -----	English—Elements of English composition. <i>Chittenden</i> . Much practice. German.	Reading and literature—As above. History— <i>Thomas's United States History</i> . Talks on general history.	Arithmetic reviewed, and treated selectively, higher. <i>Walsh</i> . Inventional geometry.	<i>Butler's Complete.</i>	
Fifth year -----	English— <i>Chittenden</i> . Latin— <i>Jones's Lessons in Latin</i> .	Reading and literature—Figures; grammatical structure; literary structure; connect with rhetorical study. History—Greek and Roman. <i>Sheldon</i> .	Algebra. Inventional geometry.	Commercial. <i>Tilden</i> .	Spring term, Constitution of the United States.

Academic Department—Continued.

HIGH SCHOOL.

	Language.	History and literature.	Mathematics.	Geography.	Political science.
First year	English—Composition. <i>Shaw</i> . Electives: Latin. German.	General history. <i>Freeman</i> . English literature.	Algebra—Fall and winter. <i>Wells</i> . Elementary analyt. geom.—Spring.	Physical geography.	
Second year	English—Rhetoric. <i>Williams</i> . Electives: German. Latin.	English history. <i>Freeman</i> . English literature.	Geometry, plane—Fall and winter. Solid, including simple presentation of conic sections—Spring. <i>Wentworth</i> .		
Third year	Electives: French. German. Latin. Greek.	American history. American literature.	Trigonometry—Fall. Elements of calculus—Winter. Surveying—Spring. Elective: Commercial arithmetic and accounting.		Civics.
Post-graduate year.	Electives: French. German. Greek.	Intensive studies in history.	Applied mechanics. Elective: Commercial arithmetic and accounting.	Elective: Commercial geography.	Intensive studies in civics.

NOTE.—All electives according to needs of pupils as determined by director.

Some fourteen pages of the Catalogue are given to the detailed programmes of the "Instruction in Science" in the several grades from "Primary" to "High" School inclusive.

In the "Conspectus of Central Studies" it will be seen that the "Science" and "Industrial Training" studies are omitted. The following general remarks introduce the detailed programmes of the Science studies:

SCIENCE COURSE.

The instruction in science is planned with particular regard to the educational value of science study and with careful co-ordination, in the higher grades, with the technical courses.

Three aims are kept in view, viz: (1) The cultivation of the faculties of keen and intelligent observation; (2) The training of the reasoning powers; (3) The acquirement of useful knowledge.

The pupil is required to express results or conclusions in his own language, and thus, thrown upon his own resources, he grows stronger and more independent in thought and expression. In the laboratories, particularly, is this true. There he is emancipated from all except a few guiding suggestions thrown out as safeguards. The office of the teacher is simply to prevent, by his greater experience, the false conclusions arising from too hasty or superficial examination.

LABORATORIES.

I.—*Biological Laboratory.*

To facilitate instruction in biological sciences, a biological laboratory has been fitted up with complete equipment for such research. It occupies a large, well-lighted room, with a southern and eastern exposure, and is provided with running water. Tables of oiled pine, designed expressly for such work, occupy three sides of this room, allowing each pupil to work with light from the front.

The equipment includes fifteen fine compound Bausch and Lomb microscopes with double nose piece, two-thirds and one-sixth objectives; twenty-four simple microscopes with hand rests; a self-centering turntable; Reichert microtome with special clamp for holding the knife at middle; an Abbe camera lucida; plant presses; slides and cover glasses with a complete stock of mounting media, cements, reagents, and stains. Each pupil is given, for his individual use, a full set of reagents in small bottles, microscopes, forceps, needles, lens paper, slides, and cover glasses. Thus, pupils are made acquainted with the technique of animal and plant histology from preparation of material through the cutting of sections and staining until the final mounting and sealing upon the slides.

Opaque shades of enameled cloth are arranged for darkening the windows, whenever it is desired to make use of a stereopticon for projection purposes in connection with the science work.

II.—*Chemical and physical laboratories.*

During the summer of 1895, chemical and physical laboratories will be fitted up, occupying part of the third floor of the Institute building. These will include supply rooms, dark rooms, etc., and will be provided with all facilities necessary to the thorough presentation of laboratory courses in the above-named subjects.

PLAN OF WORK.

Science is taught in all grades from first primary upward throughout the high school. The character of the instruction given, however, makes three natural divisions in the teaching, as follows: (1) Primary and lower grammar grades; (2) higher grammar grades; (3) high school.

Primary and lower grammar grades.

In the lower grades of the school three periods per week, of twenty-five minutes each, are given to science study. Of these, one is regularly devoted to hygiene, the remaining two being distributed among the other branches of science as the time of year and other circumstances demand. Aim is always made to take up that which is most closely connected with the environment of the pupil, and which will appeal

to him most strongly. The instruction is, as a rule, by the grade teacher, but is under the supervision and direction of the Department of Science. Apparatus of simple nature is designed in the laboratory and drawn out by the teacher as needed. Special stress is laid in these grades, upon the first two aims of science teaching, previously stated.

Careful coordination with other studies, particularly language and geography, is made, and thus the reflex value of the study is fully realized. When possible, actual objects are used, but it is intended to supplement such with pictures and charts if necessary.

Over one hundred carefully selected lantern slides, covering the subjects botany, zoology, and physiology, have been purchased for use in the science work of these grades. Window boxes filled with soil and sand furnish opportunity for study and experimentation upon plant growth. A brief conspectus of work arranged for each grade follows:

* * * * *

Higher grammar grades.

It is felt that too often pupils enter the science courses of the High School lacking in preparation along certain lines essential to individual experimentation and to a proper pursuit of such courses.

To take time from High School studies to make up such deficiencies is obviously a disadvantage. Again, some systematic study of physiology other than that received in lower-grade lessons on hygiene is thought advisable.

To meet these, a course in elementary physiology, with text-book, is offered, and two periods per week are spent in the laboratory under a special teacher, pursuing a course in introductory laboratory practice. The laboratory method of instruction is employed, and the pupil is taught the method of experimentation.

* * * * *

High school.

With the high school begins a systematic study of the sciences. It is expected that the instruction received in the grades below will allow a considerable degree of advanced and technical work here. Therefore, while the relation between various branches of science is carefully brought out, each science is considered as distinct in itself, and as possessing its own distinctive phraseology and methods. Effort is made to give those pupils who are unable to take the fourth, or post-graduate, year as useful and comprehensive training in science as possible.

Every tendency to a "smattering" of scientific knowledge and an undue haste and crowding of curriculum is strenuously opposed. The element of time as necessary for a clear and forcible grasp upon the subject in hand is insisted upon. Similarly, the inclusive study of various branches of science is rejected. Botany and zoology taught as separate sciences is preferred to a course in biology. Accuracy, attention to detail, and scientific method of study are demanded. Laboratories will be equipped, and collections, charts, and models supplied as needed. * * *

Physiology, Botany, Zoology, Physical Geography, Chemistry, Geology and Mineralogy, Physics, with a full course of two years, and Astronomy, are the studies taught in the "Science Course."

The full programmes of the courses in the Industrial Arts and in Music here follow:

MANUAL TRAINING.

GRAMMAR SCHOOL.

Manual training begins in the second grammar grade, which is the pupil's fifth year in school above kindergarten. The work of the second, third, and fourth grades is done on an ordinary school desk in a room specially equipped for this purpose. A cover fitted with a drawing board, a cutting and sawing board, and a tool recess, is provided for each desk. The instruction is given by a special teacher.

Second year.

Time.—Two periods per week.

Drawing.—Use of instruments. Simple geometric forms are first drawn on paper, then on thin wood. Draw directly on the object, the thickness not being shown.

Woodwork.—Geometric forms cut from thin wood.

Models.—Square, octagon, oblong, triangle, Greek cross, St. Andrew's cross, circle, quarterfoil, trefoil, scale, ring, thread winder, ellipse, hexagon, six-pointed star, picture frame.

Material.—Basswood, one-eighth of an inch in thickness.

Tools.—Bracket saw and knife.

Third year.

Time.—Two periods per week.

Drawing.—Review of principles taught last year. Pupils make drawings of objects to be constructed of wood.

Woodwork.—Construction of useful and ornamental articles from thin wood; nailing and gluing; chip carving.

Models.—Mortise and tenon joint, frame, sled, bracket, box, wall pocket, stairs, stand, designs for carving.

Material.—Basswood, three-sixteenths of an inch in thickness; fancy woods.

New tools.—Hammer and hand screws.

Fourth year.

Time.—Three periods per week.

Drawing.—First principles of orthographic projection; working drawings of objects to be constructed in wood; drawing to scale.

Woodwork.—Construction of geometric solids, useful and ornamental objects. Notching and chamfering; free-hand modeling with the knife.

Models.—Prism, cylinder, post, pointer, paper knife, hammer handle, flower-pot stand, water wheel, pair of scales, windmill, leaf forms.

Materials.—Straight-grained white pine.

New tools.—Try-square and sloyd knife.

Fifth year.

Constructive drawing.

Time.—Two hours per week.

Introductory exercises in the use and care of instruments; about forty fundamental geometrical problems with their applications; simple projections and designs for wood carving.

Bench work. Time—three hours per week.

Joinery.—Preliminary exercises in the use and care of tools: preparing stock and laying out work; construction of the more important joints used in the woodwork-ing trades; also useful articles in which they are employed; parquetry.

Subjects for lectures:

Tools, construction, care, and adjustment.

Principles of wood construction.

Standard measurements.

Form, adaptation, and relative strength of joints.

Inlaying, veneering, and ornamenting.

HIGH SCHOOL.

At this early stage in the development of the manual training work it is impossible to do more than indicate by outline the features which are intended eventually to characterize the course of instruction. The manual training work of the academic department is planned as an integral part of a broad and thorough training of the individual. The intellectual faculties are constantly employed in the prosecution of the work; the hand acquires skill; the mind is stored with knowledge of material things and processes, and the pupil is continually trained in habits of neatness, accuracy, attention to details, and many other equally important factors in the formation of sound character.

The fact that the mechanic arts furnish a foundation for this training must not be construed into supposing that the primary object is to acquire a trade. At the same time, great care is exercised that the subject-matter and the methods employed are consonant with the best that obtain in modern shop practice. It is thought that the knowledge thus gained will be of inestimable value through life in whatever profession or calling the student may select.

We are not exponents of any "system" or "systems," but endeavor to utilize the fundamental principles to the best possible advantage in the light of educational research and practical experience. However, the whole course of instruction,

theoretically and practically, is rigidly systematic. Both class and individual instruction are employed.

As far as possible the work is designed to have a reciprocal relation with other subjects in the curriculum.

NOTE.—At present, joinery is the only course offered in shopwork.

CONSTRUCTIVE DRAWING.

Time—Four hours per week throughout the course.

First year.

First term.—Lettering, free-hand and instrumental; line shading; flat tinting; shade lines.

Second term.—Drawing to scale, construction of scales; sectioning, lateral, cross, and oblique, sections of I beams, columns and parts of machines.

Third term.—Working drawings, including plans, elevations, sections, and details of various objects; tracing and blue printing. Talks on rules and methods for making practical shop drawings.

Second year.

First term.—Mechanical perspective parallel, and angular; architectural workings, drawings, including plans, elevations, sections, perspective, and details of buildings and building construction.

Second term.—Theory of orthographic projection; objects placed parallel and oblique to the planes of projection. Talks on the various methods of projection employed in commercial work.

Intersections and developments; development of surfaces applied in preparing working drawings for sheet-metal work.

Third term.—Conic sections; shades and shadows; construction of arches; stereotomy.

Third year.

First term.—The helix and its application to screws; standard screw threads. Plotting of cams and motion diagrams.

Second term.—Gearing, epicycloidal and involute, spur, worm, and bevel gears, rack and pinion; principles of mechanism and transmission.

Third term.—Isometric and oblique projection. Topographical drawing in connection with surveying.

Fourth year (post graduate).

First term.—Machine drawing; technical sketching; assembly and detail drawings.

Pupils make drawings from their own sketches and also from sketches furnished by instructor.

Second and third terms.—Machine design and construction; valves and valve motions; designing of machines and parts of machines from specifications; drawings of engines and dynamos. Lectures on general principles, fastenings, and transmissive machinery.

SHOP AND LABORATORY WORK.

Time.—Six hours per week throughout the course.

First year.

First term.—Wood turning. Preliminary exercises in the use of tools; construction of models, involving simple and compound curves, cylindrical and spherical forms; face-plate turning; chuck and templet turning. Scroll sawing.

Subjects for lectures:

Woodworking machines, including planers, circular, scroll, and band saws. Lathes and lathe attachments.

NOTE.—The last few lessons of the term are given in the foundry; the principles of pattern construction being demonstrated preparatory to taking up pattern making.

Second term.—Pattern making. Construction of patterns of and core boxes for pulleys, gears, columns, pipe joints, cranks, etc.; solid, split, and built-up patterns.

Subjects for lectures:

Economic purchasing of timber

Woodworking trades.

Adaptability of various woods to pattern making.

Third term—Wood carving. Incised and relief work. Conventional and natural forms. Finishing woods in oil and shellac.

Subjects for lectures:

- Structure and growth of trees and varieties of wood.
- Distribution of timber.
- Lumbering.
- Parasitic plants and timber borers.
- Preservation of wood.
- Hand work and machine work.
- Adaptation of ornament to various grains.

Second year.

First term—Foundry practice; bench and floor molding; core making; casting in plaster, iron, brass, and other composition metals.

Subjects for lectures:

- Management of cupola and crucible furnaces in melting iron and brass.
- Manufacture of alloys.
- Principles in design of castings.
- Chilled and malleable castings.

Second term—Forging. Exercises in heating, bending, drawing, upsetting, welding, shaping, annealing, and case hardening; forging machine-cutting tools, including punches, drills, chisels; ornamental ironwork.

Subjects for lectures:

- Drop forging.
- Wire-rod rolling and wire drawing.
- Fabrication of plates and tubes.
- Steam and trip hammers.

Third term—Sheet-metal work. Shaping, wiring, and soldering; making seams and telescoping; construction of various articles based upon the development of surfaces, including cups, pans, elbow and T joints; brazing.

Subjects for lectures:

- Mining.
- Manufacture of tinplate.
- Electric welding.
- Stone quarrying.

Third year.

First term—Machine-shop practice.

Chipping and filing, key seating, squaring and fitting, preparing work for lathes, scraping and polishing. Hand turning, work with speed lathe, drilling, boring, filing, and polishing.

Subjects for lectures:

- Iron and its ores.
- Reduction of ores; production of cast iron.
- Manufacture of wrought iron.
- Manufacture of steel.

Second and third terms—Machine-shop practice.

Engine lathe; proper care and use of lathe and tools; exercises in turning, chucking, reaming, boring, thread cutting, fitting, and finishing.

Drill press; drilling and boring. Planer and shaper; plane and curved surfaces and bevls; slotting.

Milling machine; milling nuts, bolt heads, reamers, drills, cutters, gears, &c.; machine construction.

Subjects for lectures:

- Materials of construction, properties, sources, and prices.
- Shop systems and methods.
- Millwrighting.
- Assemblage and erection of machinery.
- Cost of production.

Fourth year (Post Graduate).

First term—Mechanical laboratory.

Strength of materials; determination of the tensile, compressive, transverse, and torsional strength of metals; tests of brick, stone, and cement; strength and elasticity of beams, columns, girders, and trusses; graphical determinations. Calibration of dynamometer, indicator spring, and steam gauge. Viscosity and durability of lubricants. Flue gas analysis.

Subjects for lectures:

- Principles of construction. Factors of safety and moduli of elasticity.
- Work, energy, and power.
- Friction.
- Measurement and transmission of power.
- Fuels.

Second term—Engineering laboratory.

Valve setting and indicator practice; efficiency tests of water motor, steam boiler, steam pump, steam engine, gas engine, injector, air compressor, centrifugal pump, hydraulic ram, turbine water wheel.

Subjects for lectures:

- Types of engines and boilers, including simple, compound, and triple expansion, condensing and noncondensing engines.
- Erection, care, and management of boilers and engines.
- Thermodynamics.
- Economy of wastes and sanitation.
- Elements of heating and ventilation.
- Hydraulics.

Third term—Electrical laboratory.

Applications of electricity to industrial purposes; wiring, construction, management, and use of dynamos, motors, arc and incandescent lamps, electric bells and signals, telegraph, telephone, electric light and power circuits. Efficiency tests of electrical machines and instruments.

Subjects for lectures:

- Dynamo-electric machinery.
- Installation and economic operation of plants, power and light circuits.
- Electric railways.
- Storage batteries.
- Electric welding, plating, &c.

FORM STUDY, DRAWING, AND COLOR.

Form study, drawing, and color as a part of the curriculum has three aims: First, to cultivate the aesthetic sense; second, to aid in general mental development; third, to lay the foundation for technical industrial art courses.

The work is carried on under three general heads—Construction, Representation, and Decoration—the three beginning in the elementary study of type forms, through sense impressions, in the first primary grade.

All work relating to facts of form is, as the course advances, more definitely developed as construction, while all study relating to appearance of form is carried forward as free-hand perspective drawing—pencil outline of type forms and objects based on them, and later, light and shade. The faces of the type forms—the geometric figures, the circle, square, oblong, and triangle—are used for the elementary work in decoration, colored tablets being arranged by the children to make borders and rosettes, the teacher leading them, through experiment and observation, to appreciate what is beautiful.

PRIMARY SCHOOL.

First year.

The study, through sense impressions, of type forms—the geometric solids, the sphere, cube, cylinder, square prism, hemisphere, right angled triangular prism, as to wholes, surface, activities possible, comparison, study as to parts, faces, edges, corners, vertical edges and faces, parallel edges and faces, angles, perpendicular edges, right angles, acute angles, the circle, square, oblong, semicircle, triangle—seeing the type in familiar objects.

The sphere is the first model studied, and the cube is taken with it, as showing both the greatest resemblance and the greatest difference, each idea being strengthened by the contrast. After the study of the model by seeing, grasping, handling, placing, it and things like it are modeled in clay. This means of expression is used throughout the course, together with language, making and drawing, not for technical results of value in themselves, but to promote the observation and thought of the child, to develop his sense of beauty and his creative powers. Seeing exercises and free-hand drawing on blackboard and paper, tend toward free-hand perspective drawing.

Color is studied by the use of colored tablets, circles and squares of red, yellow, blue, orange, green, and violet, and the intermediates red orange, yellow orange, yellow green, blue green, blue violet, and red violet, the object being to cultivate,

through the child's natural enjoyment of bright colors, his feeling for beauty, and to awaken his higher spiritual powers. Individuality is developed through color choice and arrangement; relationship and the ideal color unit are studied. Study of individual colors is made interesting by finding things and remembering things that are like the color studied, yellow, orange, red, violet, blue, and green, and recognition of color is dwelt upon. Colored sticks are also used, and colored paper for folding and cutting, diameters and diagonals, bisecting, trisecting, cutting squares, circles, oblongs, and triangles, and arranging and pasting for borders and rosettes.

Second year.

The study of type forms is continued in the same way as during the first year, the types being the ovoid, ellipsoid, cone, square, pyramid, equilateral triangular prism, and vase form; the children build with the solids as during the first year, expressing by language all they have done; the corresponding tablets, the oval, ellipse, isosceles triangle, and equilateral triangle are also used to lay pictures of familiar objects, expression by language leading to closer observation and clearer concepts. Expression by modeling and drawing is continued as during the first year. The idea of a pattern of models, brought out but not dwelt on in the first year, is carried farther in the development of surface of the sphere, cube, and square prism. Patterns, printed or previously drawn, are given to the children to cut and paste after the idea of the pattern is fully developed in their minds. Simple view drawings are led up to by the use of the tablets and seeing exercises, and free drawing of type forms and simple objects based on them becomes a more important feature of the work. Angles and triangles are studied and made use of in elementary design.

Color is continued by the particular study of red, orange, yellow, green, blue, and violet, with two tints of each. Color tones are recognized and scaled, and paper cutting and pasting for decorative arrangements is continued—borders and rosettes in one and two tones. Water color is used in flat washes.

Third year.

The development of surface of models is continued, the children beginning to use a ruler divided only to eighths. The cube and square prism and boxes based on these, the right-angled triangular prism, and the envelope are thought out and drawn, cut, and pasted. The scalene triangle, the rhombus, and rhomboid are studied; view drawings are made of the geometric solids studied, also free-hand perspective drawings of models, simple objects, flowers, and growing plants with large leaves, as the rubber plant.

The modeling of tiles is begun with simple forms in relief in one plane.

Color is continued, yellow orange, yellow green, red orange, red violet, blue green, blue violet, and two tints of each being the colors studied; these are used in colored paper for surface and border designs in three tones; units of design are more definitely studied than before.

GRAMMAR SCHOOL.

The work in the grammar grades is a development of that preceding, except that while the primary work is largely a gaining of concepts of form, through carefully guided observation and experimental study, in the grammar grades more in the way of expression is called for.

First year.

Construction.—Type models, thinking out and drawing the developments of surface with ruler and compasses, of the cylinder, the cylindric box, the equilateral triangular prism, and the toy house. Some of these objects are constructed by use of geometric problems, and in all cases the pupil is required to think out the pattern by looking at the model. Working drawings are begun at this time, and view drawings are continued, two or more models being grouped together, the pupil gaining through this work help toward the mechanical drawing taken up later, and also power to observe accurately and draw with freedom.

Representation.—Pupils draw from models, one or more placed parallel to the eye, and from fruit and vegetables, singly or in groups, and objects based on type forms—a pitcher, mug, cup and saucer, etc., the rendering being entirely in outline.

Decoration and color.—The study of historic ornament begun. Pupils learn that the simple units previously studied are the underlying forms in many of the decorative designs of different periods and races. Growth of plants observed; conventionalization of plant form in ornament noticed. The colors used for study and

decorative arrangements are red, orange, yellow, green, blue, violet—two tints and two shades of each. Flat washes used in representing these designs after drawing.

The modeling of tiles with simple designs in relief in one plane is continued.

Second year.

Constructive work.—Development of surface of the pocketbook, cone, lamp shade, and drinking cup. View drawings continued of objects and models and groups of models, as an aid toward intelligent observation, thought, and expression. For the same reason pupils are sometimes called upon to construct objects from working drawings.

Representation.—The same as during the previous year, but instead of being always parallel to the eye the models and objects are turned at various angles. The pupils are led to judge as to the beauty of different groups and to make groups for themselves, thus beginning the study of composition.

Color.—The individual colors studied during this year are red violet, red orange, yellow green, blue green, blue violet, with two tints and two shades of each. Color is studied in its relation to decoration, and borders, rosettes, and designs to cover a surface are cut in colored paper of three tones and reproduced in flat washes with water color.

Modeling is continued from simple casts of ornament in two planes.

Third year.

Construction.—Development of surface of the wedge-shaped block, the flight of three steps, and the square pyramid. View drawings continued, sometimes from dimensions given, the pupils having no models before them.

In representative drawing the work is a continuation of the preceding year.

Decoration.—Simple examples of Egyptian ornament are reproduced in colored paper. Plant forms are studied and conventionalized; designs for borders and rosettes are arranged, some familiar plant as a motive. Designs are made in colored paper, using three tones of the same color, or different colors. The individual colors studied are red gray, orange gray, yellow gray, green gray, blue gray, violet gray, neutral gray, two tints and two shades of each.

Modeling from casts of ornament in three planes is continued.

Fourth year.

Construction.—View drawings are not continued in the fourth year, but pupils are required to make working drawings from dimensions given, of simple models, as the Greek cross, and from the working drawings the development of surface. The constructive work of this year also includes the development of the hexagonal prism and octagonal plinth.

Representation.—The work is continued as in the previous year, with the addition of making quick-time sketches of various plant and animal forms, to get the feeling of action without any effort for detail.

Decoration.—Construction in design is emphasized; more attention is given to the detail of plant form in ornament and the adaptation of various plants for arrangements in borders and surface coverings. Pupils are allowed, under guidance, to choose the colors for their work. All the colors studied in the previous years are reviewed. Simple examples of Assyrian ornament are reproduced in colored paper.

Modeling is continued as in previous years.

Fifth year.

Construction.—Thinking out and making the development of surface of the pentagonal prism and the hexagonal prism cut at an angle of forty-five degrees, and other models from dimensions given. After this year the developments in paper, the working drawings, and view drawings are discontinued, the slip work in wood and mechanical drawing being substituted.

Representation.—Charcoal is substituted for the soft pencil; large models in groups, and groups of still life are drawn in outline and with one plane of shadow and the cast shadow, the drawing being left unfinished in order that the pupil, by the constant getting of proportions and blocking in the mass of shadow, may be led to realize the importance of seeing things broadly.

The quick pencil sketches are continued, and are carried a little farther, but are still used mainly for getting the feeling of action.

Decoration.—The great laws of design, simplicity, harmony, repose studied carefully. Arrangements are made using familiar plants, and cut in colored paper. The effect of one color upon another is especially studied. Simple examples of Greek ornament are studied and cut in colored paper.

Modeling is continued as in the previous grade.

HIGH SCHOOL.

The course of study in the high school is a further development of that preceding, but is more technical; and, while still a means of general mental training and culture, is more definitely a preparation for the study of the various branches of industrial art.

First year.

Representation.—Charcoal, light, and shade is continued, values and textures being carefully studied. Pencil sketching is continued, and pupils are expected to make sketches out of school and bring them in for criticism. Free-hand perspective, which was begun in the early representative drawing of the models, is continued by the sketching of parts of the halls, rooms, and buildings.

Construction of this year deals entirely with design. Egyptian and Assyrian art is studied, and examples of ornament analyzed, the motive sought, and the design enlarged and reproduced in water color. Familiar plants are studied and their adaptation to design, comparison being made with the use by the Egyptians and Assyrians of plant forms familiar to them, and the difference in treatment of the same plant by the two peoples. Color contrast and harmony are studied, as in the previous year, experimentally by use of colored paper. Water color is also used.

Simple examples of historic ornament in two or three planes are modeled in clay.

Second year.

Work in representation is continued as in the previous year; groups of models and objects are studied, requiring constantly more close observation and careful thinking. Much attention is given to composition.

Greek and Roman art is studied and their decorative design contrasted with that of older civilizations. Examples of ornament in color are studied, enlarged, and reproduced in water colors. The study of the laws of design is continued theoretically and practically.

Modeling is studied as in the previous year.

The work of the third and fourth years follows in the same lines, not only carrying the pupil on toward a knowledge that will be of practical use, but, through the cultivation of his individual sense of beauty, broadening and refining the mind and heart.

MUSIC.

Music is taught with other aims than that of cultivating the musical talent of those who may possess it, or of training such as may desire to become musicians.

Training in music is used as a means to an end, and that end the same as that to which all study leads. It is taught so as to serve a valuable aid in the physical, mental, and moral culture of the pupils.

As a means of physical culture its usefulness has been shown in the cases of many afflicted with throat and lung troubles, who have been benefited by judicious singing. One of the first points remembered in the teaching of music is the position of the pupil. Deep breathing is impossible when the body is in a cramped position. When deep breathing has been made a habit, more has been done for the health of the pupil than can be accomplished by any other means. When this habit has been formed the body is made erect, the lungs are expanded, the circulation is improved, and the whole system invigorated.

As a means of mental discipline no subject holds a higher rank. The concentration of mind necessary for sight reading is quite equal to that required to solve the most difficult problems. The rapidity with which the mind must work to see at a glance the length and pitch of each note, to grasp the musical phrase, to read the words connected with it, to give the proper rhythm, not to mention the variations in power and time, can hardly be appreciated.

The refining and elevating influence arising from the study of music renders it of unquestionable value as an instrument of moral culture.

Instruction is given to each child, and special attention is shown to those who apparently have no particular talent, taste, or ear for music.

Two distinct kinds of work are carried on from the beginning of the course—that which is called “rote singing” and that termed “note singing.”

The “course of study” is as follows:

PRIMARY SCHOOL.

First year.

Kindergarten songs.

Scale work—First five tones of scale. Intervals 1, 3, 5; 5, 3, 1. Scale as a unit. Easy skips between 1 and 5, etc. Signs—Five fingers, hand signs, ladder, and numerals. Rhythm work begun—Rhythm exercises written in numerals. Pitch and rhythm combined in numeral exercises. Lessons “preparatory to note singing” given.

Second year.

Rote songs continued.

Scale work—More difficult intervals taught. Easy exercises from Loomis' Reader No. 1; also, Holt Reader No. 1. Written exercises—Double, triple, and quadruple measures.

Third year.

Scale work—Ladder practice continued with increased difficulties. Modulation begun. Preparatory drill for two-part music.

Reading—Holt Reader No. 1, part 1. Two-part exercises begun in part 2.

The use of the slur, tie, and hold given.

Written work—Exercises in double, triple, quadruple, and sextuple measures.

Supplementary—Normal Music Chart No. 1.

GRAMMAR SCHOOL.

First year.

Scale work—Work in modulation continued.

Reading—Holt Reader No. 1, part 2. Two-part music continued. G clef and names of lines and spaces given.

Scales of C, G, D, F, and B flat. Words—Piano, forte, cres., dim., sforzando.

Written work—Exercises written from dictation. All scales taught. Measures in different keys.

Second year.

Scale work.—Modulation continued. Chromatic scale begun.

Reading.—Holt Reader No. 2.

Written work.—All kinds of measures. Scales of A, E, E flat, A flat. Words rit., rall., accel.

Supplementary.—Normal Chart, series 2. Greenwood's two-part exercises.

Third year.

Scale work.—Modulation continued, with difficult chromatic changes.

Rhythm.—Difficult combinations. Triplets.

Reading.—Holt Reader No. 2. Two and three part music.

Written work.—Scales, major and chromatic. Measures, using all signs and terms.

Accidentals and syncopation taught.

Supplementary.—Holt chart, second series. Codas and choruses.

Fourth year.

Scale work.—Modulation, chromatic scale, interval work (thirds, fourths, etc.) begun.

Reading.—Holt Reader No. 2. Four-part work.

F clef introduced and bass sung.

Written work.—Scales and intervals.

Supplementary.—Chart No. 2. Codas. Greenwood's exercises and choruses.

Fifth year.

Scale.—Modulation. Chromatic and minor scales sung.

Reading.—Holt Reader No. 2.

Written work.—Major scales reviewed. Chromatic intervals in all keys. Minor scales begun.

Supplementary.—Charts. Codas. Choruses.

HIGH SCHOOL.

First year.

Scale work.—Modulation. Chromatic scales. Minor scales in all forms.

Reading.—Holt Reader No. 3. Intervals. Triads.

Written work.—Minor scales in all forms. Triads and chords of the seventh in all major keys.

Supplementary.—Choruses.

Second and third years.

History and literature of music.

Study of composers, forms of music, etc.

During the second and third years, chorals, glee clubs, and choirs will be formed, and difficult music for all parts studied and rendered, with attention to detail and artistic effect.

This Institute,—belonging in the group of Scientific Institutions scattered among the cities of the United States and, in each case, owing their establishment to the benevolence of an individual citizen,—differs from others of its class in the fact that, while each of the others are situated in the midst of a large population and near many schools of all classes, these educational opportunities are here offered to the dwellers in a small community; to whom, otherwise, no similar facilities would be available. The experiment for this reason is of exceptional interest.

The list of the Board of Trustees of the Institute, was given at the beginning of this account. The following list of "Officers and Instructors," is taken from the latest published catalogue, that for 1895-96.

OFFICERS AND INSTRUCTORS.

James R. Campbell, Director; Charles B. Howe, Preceptor; Mary V. Houser, Preceptress and Secretary.

Department and special instructors.—Joseph M. Jameson, Science; Charles B. Howe, Manual Training, Constructive Drawing, Edwin W. Foster, Assistant; Edith A. Palmer, Form Study, Drawing, and Color, Mary Bennett, Assistant; Mrs. M. A. Newell, English and Latin; Emmeline E. Stone, Vocal Music; Bessie M. Kellogg, Kindergarten, Emma Abrahams, Edith Barnum, Assistants; Effie M. Raynor, Primary Methods; Charlotte J. Short, Domestic Arts; Charles T. Burnett, German.

Grade instructors.—Grammar school: Charles T. Burnett, fifth year; Mary E. Calhoun, fourth year; Margaret M. Evans, Frances M. Barnard, third year; Margaret M. Grant, second year; Helen L. Shaad, first year. Primary school: M. Alice Gardner, Belle Spelman, Edith A. Ermentrout, third year; Clara F. Mann, second year; Effie M. Raynor, first year.

Helen G. Sheldon, Librarian; Ida E. Gerry, Clerk; John B. Abrahams, Superintendent of building.

IV.

THE INDUSTRIAL EDUCATION MOVEMENT IN THE SCHOOLS OF CALIFORNIA.

The large volume which is Part II, of the present Report, contains a great amount of material relating to the beginning and rapid progress of the modern movement for Industrial Education throughout these United States; but, if I am not mistaken, there is little or no mention of any development of this movement in the Pacific States, beyond the concise report of the discussion held in San Francisco, during the meeting of the National Educational Association there in 1888. The development of this movement throughout the United States, has proceeded with such gigantic strides that it would now take a volume equally as large as one of the bulky volumes of the present Report, to contain even a brief account of each of the Elementary Schools, and of the Secondary and Higher Schools, both of Manual Training and of Technology, which have sprung up all over this broad land within the past decade. As it is clearly out of the question to attempt such a task while endeavoring to complete the present work upon the lines laid down for it, already once set aside, owing to the need, which then seemed imperative, of putting by all other material until the completion of Volume II; and while it is now evident that this whole subject of Industrial and Technical Education, from Kindergarten to Institutes of Technology, has won general recognition of its proper place in the scheme of Popular Education; so that it is sure, henceforth, to receive its due proportion of attention in the Annual Official Reports of the U. S. Commissioner of Education; still, as many of those interested in this movement may fail to secure a copy of "Part II," and, as a leading purpose in the preparation of this Report is that it shall comprise a view of the whole field of "Manual Training" and of Industrial Art Education, the following material, showing something of the development of this phase of educational activity in the State of California, and which of necessity must therefore contain, if ever so briefly, a statement of the reasons which had already led to the similar educational movement throughout the country, is here given place in this supplementary Appendix to Part III.

The first of these papers is a copy of the admirable address, delivered before the California Teachers Association, in 1893, by President Charles H. Keyes, A. B., who is at the head of the important Polytechnic Institute at Pasadena, California, known as The "Throop Institute."

As, in this address, President Keyes states succinctly the main arguments for the introduction in schools generally of some forms of industrial training suited to the different ages of the pupils; this paper may well serve to give a comprehensive view of the rise and

progress of the movement to introduce "Manual Training," as a new and valuable element, in the development of Common School Education in the United States.

The second paper is a concise statement, dealing with the whole subject of Manual Training as desirable for the schools of the State, prepared by a committee of the California State Teachers' Association, appointed to investigate and report upon this subject. This includes certain interesting statistics of California Schools down to January 1st, 1896.

This paper, entitled a "Synopsis of the Report of the Committee on Manual Training," implies the future issue of a valuable full report which, to my regret, is not at hand. This suggestive outline, valuable in itself for its definite statistics, is, therefore, given here.

A note to the table of elementary schools in the State already giving Manual Training, is gratifying in this connection; since it shows that in these elementary schools, Drawing, and the kindred studies, to promote the introduction of which in American Schools, Part I of this Report was published;—have been so generally introduced in the primary grades of California Schools as to call for no special notice. That such essential studies form a part of the regular school curriculum is taken as a matter of course.

These preliminary papers are followed by accounts of two leading Technological Institutes in the State, taken from their latest authorized catalogues; and other official publications.

From these, it appears that there are in California high grade Institutions for the Manual Training of Teachers of Manual Training; as well as those for the Industrial Technical Training of youth of both sexes.

MANUAL TRAINING.*

[By CHARLES H. KEYES, A. B., President of Throop Polytechnic Institute, Pasadena, California.]

Manual Training, as I use it for the purposes of this discussion, means training the mind to use hand and eye in connection with other sense organs in acquiring knowledge from well-planned and graded contacts with objects, in giving expression to the thought stimulated by these contacts, and in transforming by tool and machine crude matter into forms of beauty and utility. It involves always two phases, one of graphics and the other of construction. Intelligent seeing and accurate making are elements of every lesson. Its aim is the development of conscious, skillful energy, and the subordination of every other power of body and mind to the action of the will, the only faculty by which, as Felix Adler has said, "means are adapted to ends." Its chief product is never the accurate drawing, the beautiful sketch, the well-made garment, the well-cooked dinner, the exactly fitted joint, the perfectly adjusted machine, the intricate and ornamental iron work, the thing of beauty which seems to speak to us from wood or clay; but it is the self-controlled, self-centered young man or woman who "has learned how to live" and prepared himself to easily learn "how to get a living." It is the boy who is to be a man rather than simply a machinist, a citizen rather than simply a carpenter. It is the boy who aspires first to the high estate of right living, and afterward to the successful following of the calling for which he has in his training discovered his adaptability. The girl trained in such a school will come out to honor first the demand of society and home for an intelligent, careful, noble woman who can be, when occasion demands it, the true friend, the helpful wife, or the worthy mother.

KIND OF TEACHERS NEEDED.

The teachers in such a school must be not simply expert carpenters, designers, blacksmiths, machinists, draughtsmen, seamstresses, dressmakers, milliners, or cooks, but all should be artists in one thing, and that one thing is teaching. Their

*An address delivered before the California State Teachers' Association at Stockton, California, December 27, 1893.

chief study should be "How boys and girls grow." The average intelligent blacksmith is no more fitted to manage and teach the boys in the iron shop of a manual training school than the average bookkeeper is to teach arithmetic and writing in a good grammar school. I hope I make clear at the outset that the first function of the Manual Training School is educational rather than economic, and that I am relieved from any responsibility for pleading the cause of the trade school as an adjunct to the general public school.

Manual training has already established itself at the beginnings of education in the Kindergarten. It is fast finding its way as objective teaching, drawing, moulding, and making in the primary school. American Sloyd has justified itself in the older portions of our country as the best means yet discovered whereby grammar school pupils realize the true ends of their education. It has, in the language of one of its advocates, "led pupils to love for labor, self-respect, industry, persistence, honesty, self-reliance, and respect for honest bodily toil. It has given them concentration of attention, appreciation of accuracy, independence of thought and action, and ability to study out new processes as well as to invent new combinations of processes already acquired."

Manual Training has proven itself indispensable in the shop and laboratory of the University. This morning we are met to consider the question, Shall it also in fitting form claim its place in the High School and thus fill the line from Kindergarten to College; or are there peculiar conditions surrounding the High School student which renders it undesirable or impracticable that he too should receive the only training which keeps in mind that he is fitting for a life of both thought and action, a life of high thinking and noble doing?

In justifying my position I shall keep in mind that the burden of proof as to desirability and practicability for any reform is always with its advocate. I shall keep ever in mind the criticism, which I admit to be well founded, that our high schools are already attempting more than they can do well. I shall also accept for the manual-training high school the commission of fitting any of its pupils who may desire it for such universities as Harvard, Yale, Cornell, Michigan, Wisconsin, California, or Stanford.

WHY MANUAL TRAINING IS DESIRABLE IN HIGH SCHOOLS.

I. I believe it is desirable to make Manual Training a part of the High School curriculum, because I believe in body culture and because almost all of the traditional high school work is in the direction of bodily destruction. In most instances our highest aim is how to give our boys and girls a High School education and bring them out at the end of four years with bodies no weaker than they were at the commencement. And when I think of our alarmingly numerous failures to do even this—when I recall such reports as that of the Imperial Commission on the eyesight of German school children, I do not wonder that the poet in a moment of disgust with our civilization should make the hero in Locksley Hall determine upon the alliance of barbarism, where his children should be reared

"Iron-jointed, supple-sinewed, they shall dive and they shall run,
Catch the wild goat by the hair, and hurl their lances in the sun;
Whistle back the parrot's call, and leap the rainbows of the brooks,
Not with blinded eyesight poring over miserable books."

We can obviate all this by finding a way to do all that is valuable in the present High School work in fewer hours, and devoting those remaining to that which shall train both bodily powers and mental faculties. This Manual Training will do, for to a large extent its aim is identical with that of the best systems of Gymnastics. Both seek, in the language of Dr. Enebuske, "to logically develop the fundamental and necessary faculties of the nervo-muscular intellect that it may be ready and applicable in any direction whenever it may be called upon to act." I would not be understood as saying that anything else can fully take the place of true educational gymnastics, but I do believe that if we will but make respectable Manual Training a feature of every High School curriculum that the bodily improvement of the students will more than keep pace with their intellectual growth, because systematic and varied exercises of the physical powers has become a part of their daily occupation and they gain strength to do by their constant doing.

IT TENDS TO INCREASE DURATION OF SCHOOL LIFE.

II. I believe it is desirable to incorporate Manual Training in the High School curriculum because it will bring into the high schools a vast army of boys and girls who now leave at the end of or during their grammar school course. A portion of these leave

because of the general impression that what follows has no practical bearings and is neither a fitting for living nor for getting a living. Where Manual Training has been introduced scores of these pupils enroll and take with great zest along with their Manual Training the very subjects, lack of interest in which drove them out of their regular school. Another class, largely boys, leave because it really has no interest in the major fraction of that which occupies the high school student, an admission that by no means implies that the deserting students are dullards. Speaking of this class Gen. Francis A. Walker says:

"There is now no place, or at best only a most uncomfortable one, for those boys who are strong in perception, apt in manipulation, and correct in the interpretation of phenomena, but who are not good at memorizing or rehearsing the opinions and statements of others; or who by their diffidence or slowness of speech are unfitted for ordinary intellectual gymnastics. These boys are quite as numerous as the other sort and are quite as deserving of sympathy and respect, besides being rather better qualified to become of use in the industrial and social order. And yet for this class of boys the school offers almost nothing upon which they can employ their priceless powers. They may, by laboring very painfully over the prescribed but uncongenial exercises, escape the stigma of being blockheads, but they can never do very well in them. They will always appear to disadvantage when compared with the boys with good memories for words, whose mental and moral natures accept with pleasure or without serious question the statements and conclusions of others. Such boys are practically plowed under in our schools as not worth harvesting. And yet it not unfrequently happens that the boy who is regarded as dull because he can not master an artificial system of grammatical analysis, isn't worth a cent for giving a list of the Kings of England, who doesn't know and doesn't care what are the principal productions of Borneo, has a better pair of eyes, a better pair of hands, a better judgment, and, even by the standards of the merchant, the manufacturer, and the railroad president, a better head than his master."

MANUAL TRAINING GOOD FOR ALL PUPILS.

Manual training has everywhere appealed to both these classes. Such is the experience wherever it has been introduced, whether in a school already existing or in an independent institution. As a specimen of this evidence, I desire to submit the condition disclosed in Chicago. Dr. H. H. Belfield, the director of the school, and for many years a successful teacher in the public schools, says:

"The city of Chicago is well supplied with excellent public High Schools, eleven in all, in which no charge is made for tuition. But the great majority of the pupils of the Chicago Manual Training School are graduates of the city grammar schools, and have been admitted to the city High Schools. Rather than attend a city High School within a few minutes' walk or ride of their homes, our boys travel miles to reach the Manual Training School, many of them coming long distances. Some of those who depend on railway transportation are compelled to rise early and return home late. Some, especially those living outside the city limits, in the suburban villages where there are good schools, travel from 10 to 30 miles daily. Two of our graduates of last year made a daily journey by rail of 80 miles, 40 miles each way, for three years, notwithstanding the existence of an excellent High School in their own city, Aurora. Certainly the 900 boys who have attended the school during the seven years of its existence have felt the need of something more than could be obtained in the public High Schools. Else, why have they been willing to rise early, stay late, and travel many miles in all kinds of weather?"

"These boys do not come against their will. The school refuses to receive a boy who does not desire to attend it. It is not a reform school. They do not come to escape work, since the school exacts from every one of its pupils, in addition to the regular High School work, one hour every day in the drawing room and two hours daily in the shop, making a school day of six hours, and rendering necessary the preparation of most of the lessons at home or on the train. Neither do they come for the purpose of learning a trade, since the greatest care is taken to impress on the minds of both parents and pupils that no trade is taught."

MANUAL TRAINING AS A TIME SAVER.

III. Again, Manual Training should constitute a part of every high school curriculum in order to prevent the wicked waste of time now indulged in, and to stimulate pupils to intellectual concentration. For four years pupils devote their energy for five or six hours daily to preparing for college or completing an equivalent course of study. The Manual Training High School, on the other hand, gives practically half of each day to hand and eye culture, and sends its graduate out prepared for the best colleges of the country, even when tested by standards that ignore all efforts

save those in the traditional lines. Certainly any modification that enables students to do a given work with thoroughness in half the time usually allotted to it is "a consummation devoutly to be wished," not alone because the remaining half of the time can be devoted to other valuable culture, and because it not only fosters and develops, but compels concentration of intellectual energy, the only mark of difference between mediocrity and genius. With its coming we may find a way to follow Horace Mann's advice, "Give one-half of the school time to creating a desire to learn, and you will teach more than by devoting all to books." To one who has had no opportunity to compare both modes of secondary education, this conclusion that we could do all that is worth doing in our present High School Courses in one-half of the number of hours now devoted to them seems paradoxical. And yet it is not so strange when we pause to give proper heed to two important considerations. First, that we spend too much time in our high schools on that which is neither preparation for life nor for college, judged by the standards of either. We may have ceased to teach our boys and girls—

"The Royal genealogies of Oviedo
The internal laws of the Burmese empire
By how many feet Mt. Chibmorazo outsoars Teneriffe
What navigable river joins itself to Lara
And what census of the year five was taken Klagenfurt!"—

but when the Browning of another day shall sing the Aurora Leigh of ours, there will be no dearth of facts on which to base this self-same plaint of wasted time.

RESULTS OF EDUCATION EXPERIMENTS IN ENGLAND.

The time limit to mental receptivity through ordinary class or study methods is so aptly set forth by the experience of the English Child-Labor Commission of 1883 that I desire briefly to call your attention to it. This Committee, with the eminent Sir Edwin Chadwick at its head, was appointed by Parliament to enquire into the condition of child labor in the factories. It was discovered that for many years thousands of children had been employed for twelve hours per day and thus kept from all school advantages. A population was rapidly growing up which through its intellectual and moral degradation must sooner or later become a dangerous menace to the whole social structure. The Commission, to remedy this condition, recommended and secured the enactment of a law compelling factories to require of each of their child employees a certificate from a competent teacher in a fitting school to the effect that the child had been under instruction every school day of the preceding week. This was subsequently modified so that children were working in the factories in two shifts, one in the morning while the other was at school, the other in the afternoon, when the morning laborers become the pupils. Within a few years eminent medical authorities were testifying to superior physical growth; police authorities and philanthropists to improved moral tone, and employers to a higher grade of work. All this was to have been expected. But the surprise came, says Mrs. H. M. Plunket in her admirable article on the Kindergarten and Manual Training, when after twelve years of careful study of more than twelve thousand children involved, Mr. Chadwick was able to and demonstrated not only that half-timers were doing better work in school than whole-timers, but they were characterized by superior mental activity, but the full-time scholar in the board school found himself at his fourteenth year three years behind the half-timer from school and factory. What wonder, then, that Mr. Chadwick should say in 1882, after having given fifty years to the study and observations of the elements of this great problem, unfortunately the primary principle of education—the capacity of the recipient—the mind is not understood or regarded. The receptivity of the minds of the great mass of students for direct class teaching is less than three hours, and when these limits are undistinguished and disregarded the consequences are displayed in wearisome efforts to get quarts into mental capacities of pints, and gallons into quarts, with prolonged sedentary detentions for this foolish purpose, and grievous bodily as well as mental injury. It must be borne in mind, too, in dismissing this point, that all the advantages disclosed above accrued from the experience of the pupils in shops and factories whose only cause for existence was the accumulation of pounds, shillings, and pence for their owners. Where the shops organize solely for the best training for the boys and girls the advantages are infinitely greater. So, as means to the banishment of intellectual dissipation and the development of the power of concentration, let us have Manual Training in our High School.

MANUAL TRAINING STUDENTS KNOW THEIR OWN POWERS.

IV. Again, Manual Training has a right to a place in our secondary schools because it will furnish pupils an opportunity to become acquainted with their own powers,

and especially those powers which the vast majority of them must exercise in earning a livelihood. Examination of the graduate records of a large number of representative high schools discloses the fact that between sixty and seventy per cent of their graduates go into distinctly manual or mechanical walks of life, lines in which they must choose blindly, because school has furnished them no opportunity to learn their own adaptabilities. Felix Adler says, "One of the greatest functions of the school is to help the pupil discover his own true individuality." One of the reasons why so many people fail is because they were apple trees and the teachers trained them as if they were peach trees. And the mischief is that many of us do not know whether we are apple trees or peach trees. It is not easy to discover one's own bent, one's own true direction. While I do not claim that this new method of Manual Training is going to do everything, that it is the solvent for all our ills, yet it can contribute much in this direction. Harmonious culture is an excellent thing as an ideal, but do not let us deceive ourselves; it is an ideal only. If it leads us to neglect special fitnesses on the part of our pupils, it will lead us into a grand mistake. Like every idea it is apt to be overdone. You cannot give the boys who are destined by nature to be mechanics or engineers the same literary training you would give to your born poet or writer.

The main object is not to neglect that side of their nature, but to try to cultivate it as far as possible. The deeper culture will be laid in the direction of specialties. No man can be generally cultured till he has received special culture. I believe that any one who begins at the surface of a sphere and digs down far enough will get to the center. Knowledge is a sphere, and from the center one can command the whole sphere; while he who remains on the surface covering, or trying to cover all the domains of knowledge with his falsely called general culture, will never be deep. Take one specialty and go deep enough and you will get the best general culture it is possible to achieve. I regard this new opportunity for Manual Training, among the rest, as a means of discovering the special fitness of the pupil, because the character of the pupil develops best in the sunlight, because a man or woman is always likelier to be morally strong if he or she has found the right sphere of activity.

MANUAL TRAINING GIVES INSIGHT INTO MANY OCCUPATIONS.

Students who have taken a regular course in a good Manual Training School will at the end have mastered the tools, machines, and underlying principles of over a hundred callings, and will be able to determine with some degree of wisdom the calling of his liking, and, what is more important, will have banished many early illusions as to his own adaptability. When the managers of Manual Training schools get over the fear that their institutions are to be taken for trades schools, and stop to remember that courses can be so shaped as to subserve strongly economic ends, while keeping educational aims ever foremost, we shall do more and more towards discovering the pupil to himself. The false notion that only those subjects that have few or no relations to practical life can be the basis of any true culture, kept the natural sciences and applied mathematics out of an equal place beside the classics and pure mathematics a century too long. So, if in our secondary school Manual Training is to grow unhampered by supersensitiveness about the stock criticisms whose shibboleths of attack are "trade school" or "merely manual," it will be because the true teacher will recognize that 'tis the method of the trade school rather than the matter that is out of place in secondary education, and if educational method be pursued we may not fear any "mere training of the hand." We will rather ask with Dr. McAlester, of Drexel Institute, "And why should not the hand be educated? It is the most wonderful instrument in the world, the necessary complement of the mind in dealing with matter. It is the hand that rounded Peter's dome; it is the hand that carved those statues in marble and in bronze; it is the hand that painted those pictures in palace and in church which we travel into distant lands to admire; it is the hand which built the ship that sails the sea laden with the commerce of the world; it is the hand which shapes the machinery that drives the busy industries of this age of steam and electricity; it is the hand which enables the mind to realize in a thousand ways its highest imaginings, its profoundest reasonings, and its most practical inventions. Why, then, any disparagement of the hand in the schools?" I should not have it supposed that because of what I have said or failed to say about trade schools that I accord them no place in the scheme of public education. They have a place, it seems to me, and demand recognition before the schools of law, medicine, dentistry, or even agriculture, now so commonly supported by our commonwealths. They should follow immediately the High School of the future, which, in my judgment, is bound to be a Manual Training High School. Dr. Balliett, of Springfield, has so clearly indicated the difference in function between these schools, and set out so tersely the psychological limitations of each, that I beg

to quote him. He says: "The muscular movements involved in the handling of tools are made at first by nerve energy, which comes from the brain, but after these movements become automatic by practice the brain relegates them almost wholly to the spinal cord. Such movements cease to be of much educational value when they are no longer directed consciously by the brain. Any process in manual training ought to stop when it ceases to be brain work. Here we have the difference between the manual training school and the trade school. The manual training school stops when the point mentioned is reached. Its purpose is purely educational. The trade school continues the training in skill even after the process is relegated to the spinal cord, in order that the person may develop the power of producing as large a quantity as possible of goods of high grade of finish in a given time for the market. Its purpose is economic. This is a basis for the distinction between the two which has been entirely overlooked in discussions of manual training."

MANUAL TRAINING DIGNIFIES ALL LABOR.

V. Further, Manual Training should have a place in our secondary schools, because it will teach boys and girls to entertain real respect for honest labor. We live in a day in which the conflict between labor and capital is taking ominous form, in a day in which the struggle between the masses and the classes warns us of impending danger. All is born of the fact that two lines of false education prevail. The illiterate voter is being taught by the professional political agitator that the intellectually or financially more favored classes have entered into a conspiracy to enthrall labor, that for it they entertain no regard. And, again, the mass of the good citizens who are giving their boys and girls any but the most elementary education, are doing so under conditions that beget no sympathy for labor and no respect for the laborer. During each succeeding political campaign we go out and cheer to the echo the sonorously eloquent declarations of our stump speakers concerning the nobility of labor and the special love and regard which the party entertains for the horny-handed son of toil. We go home to realize in a cooler moment that we have been deluged with torrents of rhetorical blue bosh. We appreciate, when too late to rebuke, the insincerity of the man who simply talks in that way to win votes, but we go on educating our boys to prefer to associate with any quack of a doctor or shyster of a lawyer rather than to fraternize with him who has honestly earned a right to existence, even at the expense of smutting his hand or browning his face. Deny it how we will, our sons, and daughters, too, are being educated to believe that true gentility and manual labor are incompatible. What wonder, then, that the American boy more easily becomes an agent than an artisan? For fifty years parents have been urging boys and girls to study hard in school that they might not be compelled to work for a living when they grew up. The advice did not contemplate that the young people should fit themselves "to beat the world out of a living." It was born chiefly of two convictions—one erroneous, the other well founded. The small class who urged diligence in school on this basis had in mind the avoidance of manual effort, because they believed it harder than other forms of exertion and naturally desired careers of comparative ease for their children. The large class, however, appreciated not only that the prizes of life fell to those in the professions, but that the world had small respect for the laborer. What wonder, then, that under these conditions we should speedily reach the day of importing our skilled workmen, our master artisans, and directors of manual effort from foreign lands? What wonder, then, that so many of our American boys grew up to join the army of the dissatisfied, the unemployed? We have not trained them how to live otherwise. The remedy that alone can save us from becoming

"The land to hastening ills a prey,
Where wealth accumulates and men decay,"

is to give our boys and girls the experience of the Manual Training school. There will be no occasion for such to be taught that labor is honorable in just the degree that it is intelligent. This sentiment will have become a part of their natures and a large element of their self-respect. No boy who has with his own hands used the tools of the wood shop, the pattern shop, the smithing shop, and the machine shop, knows what it is to earn directive intelligence by the sweat of his brow, can ever fail to recognize in every honest toiler a brother man. No girl who has along with her Latin and her mathematics mastered the elements of the Arts that invite her to the clay room, the carving room, the sewing and dressmaking room, or the kitchen of the manual training school, will ever grow up to be the woman who dreads association with working people, or the mother whose sons are naturally dudes. She will be less apt to furnish long letters for the Sunday newspapers on "What is the matter with the servant girls of to-day?" But she will because she recognizes that

these poor, dissatisfied creatures have not lost their right to be known as sister women simply because they toil, be better able to make them see the necessity of becoming artists in their humble calling. She will be better able to appreciate the lesson of that wonderful picture of which William Cullen Gannett tells in "Blessed be Drudgery." He found it in one of the galleries of the Louvre. It was the interior of a convent kitchen, and there were busy at the work not slatternly women in slovenly old dresses, but beautiful, white-winged angels, with a little cherub running here and there getting in the way, trying to help. Each seemed to so refine her work as she did it that in some way you forgot that pots were pots, kettles were kettles, and pans were pans, and only thought how beautiful kitchen work was, just the thing the angels would choose to do, of course.

MANUAL TRAINING AIDS LABORATORY SCIENCE WORK.

VI. Again, let us have Manual Training in our High Schools because it will make respectable science work, which is now almost unknown in such schools, both possible and easy. The difficulty of all science teaching in High Schools to-day is that there is no real laboratory work. When even meager opportunity is provided, the absence of all collateral training of hand and eye makes the average pupil so bungling in manipulation and inaccurate in observation that the teacher is tempted to the miserable "showing, illustrating, and compounding method" that makes a farce of so much of our science work. When pupils are constantly trained to use hands and eyes they can be trusted to use them in the scientific laboratory. Again, the presence of the shops and their equipment makes individual apparatus possible without large cost. The training in drawing makes it possible for the young science student to see twice as well and to submit to his instructor twice as speedily, accurate evidence as to what he has seen. So greatly does Manual Training improve the opportunity of the science teacher and student, that it does not seem to me unreasonable to require of Manual Training High Schools double the accomplishment in natural science lines that is possible in traditional secondary schools.

MORAL VALUE OF MANUAL TRAINING.

VII. Lastly, let us have Manual Training in our High Schools because it will give to our boys and girls the highest kind of moral culture. In the manual lines of work a sham or any form of dishonesty is so certain to reveal itself that the pupil not only learns that virtue is its own reward, but that dishonesty advertises itself, and by its very form invites the rebuke of teacher and classmates. Such defects in the effort at preparation of the lesson in history or mathematics or English may escape the vigilance of even the experienced teacher; but the doctored exercise of the shop cries aloud, "Behold my deformity." Thus honesty is made easy, and dishonesty painful; and the correct habit is formed.

The moral nature is strengthened, too, by such training, because it plants the habit of industry, the chief barrier to idleness, which is the beginning of crime. The pupil who learns to labor at his books has, of course, acquired this habit in large degree, but when he has also learned to labor with his hands he has come to feel the necessity to be ever doing; he knows "the devil never comes when he hears the anvil ring." His heart is full at the sentiment which George Eliot puts upon the lips of her hero in her poem *Stradivarius*. She makes the old violin maker, whose instruments are now worth their weight in gold, say:

"If my hand slacked I should rob God.
Who is fullest good, leaving a blank
Instead of violins; for He could not make
Antonio Stradivari's violins without Antonio."

As urged earlier in this paper, Manual Training tends to break down class distinctions and to teach the universal brotherhood of man. It also teaches us in a remarkable degree the value of things, by enabling us to apply the true test: What labor, skill, and trouble have been involved in their production? And it is upon our valuation of men and things we are told that our moral conduct largely depends. And Manual Training will improve the moral nature because of its demand for activity. Herr Seidel has well said that "the self-activity which it exercises is the way to morality. Only action can train the character, and only in action can it become apparent; only by action can morality come to light. A mere passive morality which only avoids the bad, but does nothing good, is but the beginning of true morality. The great Florentine (Dante) well places in the forecourt of hell those who have avoided the bad, but have not earnestly striven after the good."

Manual Training in our secondary schools will help us to give every student the desire to be not simply good, but good for something.

To summarize, then, I plead for Manual Training in our secondary schools for the following reasons: First, It is a most efficient form of physical culture; Second, it is a means whereby a vast army of youths who now receive only primary education may be drawn to the secondary school and receive its culture; Third, it stimulates intelligent concentration in an intense manner and obviates the dissipation of energy and waste of time now characteristic of our high school work; Fourth, it gives real preparation for life by acquainting pupils with their own powers and discovering unto each one his true individuality; Fifth, it ennobles labor, thereby solving the gravest economic question of the day; Sixth, it makes reputable natural science work possible in the High School; Seventh, it grows the moral fibers of honesty, industry, and fraternity. For these reasons, I believe it destined to be the education which the youth of our country demands, the education which, as George William Curtis has said, "Shall with one hand point the young American to the secrets of material skill and fullest trade intercourse with all mankind, while with the other she shall point to lofty thoughts and commerce with the skies."

SYNOPSIS OF THE REPORT OF THE COMMITTEE ON MANUAL TRAINING.*

ELEMENTARY SCHOOLS.†

City.	Kind.	Sex.	Grades.	Time weekly.	Pupils.	Cost.
San Francisco	Woodwork Cooking..... Sewing.....	Boys Girls Girls }	6th-9th.....	2 hours.	(?)	(?)
Oakland	Bench work Wood carving..... Sewing.....	Boys Girls Girls }	7th-9th.....	90 minutes.	{ 150 136 }	\$1,400 (outfit).
San Diego.....	Cardboard sloyd Wood sloyd..... Sewing.....	Boys Boys Girls }	5th 6th, 7th, 8th..... 3d-8th.....	{ 70 min- utes.	{ 310 650 }	\$590 (outfit).
Santa Barbara	Wood sloyd..... Cooking..... Sewing.....	Boys Girls Girls }	6th-8th..... 8th 6th and 7th.....	{ 2 hours.	{ 155 250 150 }	\$1,300 (outfit). \$7,500 (building).
Stockton.....	Wood sloyd.....	Boys	7th, 8th, 9th..	90 minutes.	165	\$700 (outfit), \$750 (building).
San Jose Normal.	Paper and wood sloyd.	Both	1st-8th, normal.	90 minutes.	150	\$500.
Los Angeles Normal.	Wood sloyd.....	Both	7th and 8th, normal.	3½ hours	300	\$800 (outfit).

SECONDARY SCHOOLS.

School.	Scope.	Resource.	Cost.
Throop Polytechnic, Pasadena.	Elementary Academic..... Normal.....	{ Endowed and tuition (\$250,000).	\$47,006 (equipment)
Lick School, San Francisco.....	8th and high.....	Endowed (\$540,000).....	\$140,000.
Polytechnic High, San Francisco.	High school.....	City system.....	\$5,000 (equipment), \$15,000 (building).
Cogswell Polytechnic, San Francisco.	.....	Endowed.	
Wilmerding (to be located).....	.....	Endowed (\$400,000).	

† Exclusive of drawing, color work, and clay modeling. Many consider these of even greater importance than the later manual training. They are omitted from the table because they are very generally in use.

I.

WHAT HAS BEEN ACCOMPLISHED IN CALIFORNIA SCHOOLS.

1. Manual training defined: Not merely hand training, nor even mind training through the hand, but character culture through constructive activity. Not in any sense trade teaching, therefore.

* Status of manual training in California, January 1, 1896.

2. Girls receive forms of manual training different from those given to boys. This distinction by sex justified and contrasted with teaching special avocation.

3. Manual training is not, as is commonly supposed, something new. Its status in American schools. It has been applied, as a subject of study in elementary schools for the past two hundred years. Most of the historic educational writers have given favorable utterance regarding it. Martin Luther made direct reference to its value as a factor in the training of boys. The history of manual training threads the history of pedagogy. In the infancy of the race the teacher, Nature, used manual training as almost her sole device for evolving the creature who thinks. Manual training therefore antedates every other means of education.

4. Clay modeling and drawing assuredly are manual training.

5. The Swedish and Russian systems—these the dual foundation of American manual training. Their contrasting characteristics. The Swedish sloyd principle best adapted to the elementary school.

6. Conclusion to be drawn from the table—

(a) That there is a large field of usefulness for manual training below the secondary school.

(b) That such manual training need involve little expense.

II.

1. WHAT CAN BE DONE IN ELEMENTARY SCHOOLS.

The physical activities of the pupil have not been utilized as they should be in the acquisition of knowledge.

Manual training includes clay modeling, paper cutting, color study, drawing, and tool work.

With advancing civilization comes a new environment; with a new environment come new necessities; with new necessities should come a course of study that will enable the pupil to adjust himself to his environment. Thus we believe the future life work of the pupil should affect the course of study.

Manual training should be made one of five "great branches of study."

The essentials of a manual training course and equipment.

2. MANUAL TRAINING PROGRAM FOR ELEMENTARY SCHOOLS.

In all city schools at least one-fifth of the school time should be devoted to the study of manual labor.

First, second, third, and fourth years.—Conceptional drawing as an auxiliary in science; constructive drawing in connection with sloyd; color study, paper folding, and paper cutting; block, tablet, stick, and ring laying, to teach number, etc.; sewing, clay modeling, type forms and familiar objects; cardboard and thin-wood sloyd (two dimensions only); collecting seeds, woods, plants, etc., preservation of specimens.

Fifth and sixth years.—Drawing, teach principles of correct drawing; conceptional and instrumental drawing; color study; sand modeling, as an aid in geography; cardboard and thin-wood sloyd, fifth grade, three dimensions; tool work, at desk or bench.

Seventh and eighth years.—Freehand and perspective drawing; designs for carving, sloyd, and school apparatus; water coloring, clay modeling, sewing, and cooking; tool work at desk or bench, sloyd joinery, carving, and school apparatus.

The necessity for wider knowledge. Parents and teachers should be led to see the dignity of intelligent hand work.

III.

RECOMMENDATIONS FOR COURSES OF STUDY IN SECONDARY SCHOOLS.

1. The basic principles of manual training.

2. The attitude of Eastern, Middle, and Southern States toward manual training contrasted with that of California.

3. Courses in manual training, while desirable, not feasible for country high schools.

4. Estimated cost of equipment, not including building, for a three years' course. (For details of estimated cost, see printed report of association meeting for this year.)

5. The desirability of securing complete outfit for both wood and metal work.

6. Suggestive course of study.

Provisional course in manual training.

For boys.				For girls.	
Drawing.	Periods per week.	Manual training.	Periods per week.	Drawing and modeling.	Periods per week.
Free-hand.....	2	Joinery, cabinet work, pattern making.....	10	Drawing, free-hand.....	5
Mechanical.....	4			Wood carving.....	5
				Clay modeling.....	4
1st half:		Pattern making.....	2	Drawing, free-hand.....	5
Free-hand.....	1	Forging, vise work, and machine tool practice.....	8	Clay modeling.....	4
Mechanical.....	4			Wood carving.....	5
2d half, mechanical.....	5				
Mechanical.....	6	Construction work (machine tool practice):		Drawing, free-hand.....	6
		1st half.....	10	Clay modeling.....	3
		2d half.....	12	Wood carving.....	5

OUTLINE OF SHOP WORK.

Woodwork.—Care and use of tools and woodworking machinery. Joints, such as halved, mortise, and tenon, mitre, dovetail, etc. Making of chests, tables, book-cases, etc. Set of elementary wood-turning exercises, turning tool handles, mallets, rosettes, inkstands, etc. Pattern making, elbows, ties, valves, and patterns for machines and parts of machines to be built in the shops.

Forging.—Upsetting, drawing, bending, welding, tempering, forging hooks, rings, chains, tongs, cold chisels, lathe tools, lathe dog, parts of machinery.

Machine shop.—Chipping, filing, fitting, and miscellaneous vise work. Planing, drilling, tapping, reaming, screw cutting, straight and taper turning, chucking, boring, and general lathe work. Polishing and hand turning. Construction of machines, small engines, dynamo, lathe, and drill.

OUTLINE OF COURSE IN CLAY MODELING.

Modeling type solids and objects applying type solids; from nature and cast, fruits and flowers; from cast, different styles of historic ornament; original arrangement of design; motif; historic ornament.

WOOD CARVING.

Preliminary exercises for care and use of tools; horizontal and vertical decoration, plane and curved surface curving, incising and stamping, low relief in historic style.

IV.

THE TEACHER OF MANUAL TRAINING.

1. Manual Training in our public schools is to be justified only on educational grounds. The teacher demanded for this service should be first of all a teacher, and not an artisan or an engineer.

(a) To be a teacher is to be possessed of such culture and power as shall inspire the young to desire strength and cultivation for themselves. To be a teacher is to possess such mastery of the subjects of instruction, such art in imparting knowledge as to make certain that youth shall transform that knowledge to the wisdom which alone is power.

(b) But to be a manual training teacher who shall truly advance the cause of industrial education is to be all this and something more. To the equipment for general instruction must be added technical art, mastery of the tools, processes, and materials, through contact with which shall be developed conscious, skillful energy.

(c) The manual training teacher, too, needs large general culture for the removal of the impression that manual training is teaching boys carpentry, blacksmithing, etc.; that this work must be done by men who are simply carpenters and blacksmiths; that such men are usually comparatively illiterate.

2. The present sources of supply for manual training teachers are chiefly two—the technical college and the manual training schools themselves.

(a) The graduates of the former are seriously handicapped by the fact that the point of view of the technical school is totally different from that of the training school.

(b) The graduates of the manual training high schools, who, in turn, take places as teachers in such schools, labor under an additional disadvantage. They are not only without professional training for the work of teaching, but have had from three to four years' less academic culture than the graduates of technical colleges.

3. For the future some things seem definitely settled. First, the teacher of elementary manual training must be also available as the teacher of the common school. This being the case, our normal schools should provide instruction in elementary manual training.

4. The special teachers and supervisors of manual training in other elementary, secondary, and normal schools must get their training in specialized institutions. These institutions should furnish opportunity for the comparative study of the various forms of manual training. This is necessary to prevent narrowness.

5. This opportunity for the preparation of teachers must be provided before the best manual training will come to be a common thing. Then we will cease to have illiterate manual teachers; then lack of ordinary culture and scholarship as well as professional training will be impossible in the manual training teacher.

6. Until the coming of this day none but teachers in the truest sense of the word shall be admitted to the manual training rooms.

7. Finally, for the inauguration of work in manual training teachers of special skill and wisdom are demanded. On the result of the effort of the first year in a single community may depend the fate of manual training for a whole county or for the State.

CHARLES H. KEYES, *Chairman.*

SAMUEL T. BLACK.

EARL BARNES.

WALTER J. KENYON.

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V.

THE THROOP POLYTECHNIC INSTITUTE AND MANUAL TRAINING SCHOOL, PASADENA, CALIFORNIA.

In the February, 1896, number of "Education Extension," Mr. George B. Hodge, the energetic Secretary of the International Committee of The Young Men's Christian Associations, gives an interesting account of a visit to the Throop Polytechnic Institute, in Pasadena, California, with which he was greatly delighted and, also, surprised to find how very general was the attendance, in the different departments of the Institute, on the part of the children and youth of the beautiful town of Pasadena. In concluding he ranks Throop Institute, in its equipment and in the thoroughness of instruction given, alongside of The Pratt Institute, of Brooklyn; with which latter institution he has been well acquainted. Certain it is, if one may judge from the excellence of the make-up of its catalogue and its free use of the printing press and of photographic illustrations, this institution may claim the right to be ranked with the best schools of its class.

The following statements are mostly taken from the fourth annual catalogue for 1895-1896.* This is a handsomely printed pamphlet of 40 pages, with 8 additional full pages of photographic illustrations; showing the fine buildings, the various laboratories and work rooms with groups of pupils busied in their several industries,—the machine shops; and two pages, showing sample cases of "Sloyd" and "Joinery" models. The excellence of the theoretical and practical statements it contains has led to unusually full quotations from this Catalogue.

THROOP POLYTECHNIC INSTITUTE.

FOUNDING.

The Throop Polytechnic Institute, of Pasadena, Cal., was founded by Hon. Amos G. Throop, who, in 1891, endowed it with \$200,000, and consecrated all his energy to its support. Articles of incorporation were filed September 23; the first board of trustees organized on October 2. A five years' lease of the Wooster Block, a handsome and commodious four-story brick building, situated at the corner of Fair Oaks avenue and Green street, was secured and fitted up with appropriate furnishings. The doors of the institution were opened to students on November 2. It was established as an institution of learning that should furnish to students of both sexes and all religious opinions a liberal and practical education, which, while thoroughly Christian, should be absolutely nonsectarian in its character.

In 1892 it was determined to make manual and industrial education the characteristic feature of the school.

LOCATION.

Pasadena is generally acknowledged to be one of the most beautiful residence cities in California. It has a population of over 10,000. It is situated within 10 miles of the city of Los Angeles, at the head of the San Gabriel Valley and at the

* Fourth Annual Catalogue of Throop Polytechnic Institute and Manual Training School, Pasadena, Cal. 1895-1896. B. R. Baumgardt & Co., Los Angeles. Pp. 40.

base of the picturesque San Gabriel Mountains. In beauty and healthfulness, in the culture of its homes, and in its high social and moral tone, Pasadena has no superior on the Pacific Coast. It is reached by the Santa Fe and Los Angeles Terminal railways, as well as by an electric railway, whose lines pass just in front of each of the halls. This last road extends from Los Angeles through Garvanza and South Pasadena. Students living at any point along this line will be enabled to make the daily trips to and from the institution for little more than ordinary street-car fare. The Southern Pacific is also building a road into Pasadena.

COURSES, DEPARTMENTS, ETC.

The Institute comprises three distinct Departments, a Sloyd School, a Manual Training Academy, and a College Department. Manual Training is one of the leading characteristics of the Institute. Its aim is the development of conscious, skillful energy and the subordination of every other power of body and mind to the action of the will. Its chief product is never the accurate drawing, the beautiful sketch, the well-made garment, the well-cooked dinner, the exactly fitted joint, the perfectly adjusted machine, or the intricate and ornamental ironwork; but it is the self-controlled, self-centered young man or woman who has learned how to live and has prepared himself to easily learn how to get a living. It is the boy who is to be a man rather than simply a machinist, a citizen rather than simply a carpenter. It is the boy who aspires first to the high estate of right living, and afterwards to the successful following of the calling for which he has in his training discovered his adaptability. The girl trained in such a school will come out to honor first the demand of society and home for an intelligent, careful, noble woman, who can be, when occasion demands it, the true friend, the helpful wife, or the worthy mother.

While it is true that the young man or woman who takes the manual training course may master any one of a score of arts, trades, or callings in a few months, while the average man or woman requires years, it is far from true that this training is only or chiefly valuable to the boy who is to be a carpenter, a blacksmith, a draftsman, an architect, a machinist, an engineer, or an artist. For the physician or surgeon no preparatory training is worth more. For the lawyer, in this day of endless commercial litigation, what preparation is better? For the preacher, what training can better fit him to appreciate the condition of the masses of the people? And, as "learn to do by doing" becomes something more than a fine institute sentiment, such training for the teacher is indispensable. The man who has to manage large commercial, manufacturing, or constructive enterprises needs such training for the protection and economic expenditure of his capital more than the laborer needs it for the winning of his livelihood.

It must not be assumed that the girl who takes this training is to become a drafts-woman, a milliner, an artist, architect, a professional cook, housekeeper, or dress-maker, a typewriter, a pharmacist, or a teacher. True, she has prepared herself to rise to mastery in these lines; but she has also prepared herself for the thorough management of a home. She has secured a training as essential for the lady whom others must serve, as for her whose skill wins her daily bread.

In addition to the courses of the manual training school and college department, opportunity is afforded teachers to prepare for service in high schools as instructors in the languages, mathematics, natural sciences, etc. The training of teachers for manual training and sloyd schools, in which education by doing has become a real thing, also receives attention. Laboratory opportunities are offered mature students who have had experience in the schoolroom.

A fully equipped sloyd school, in charge of an able teacher, is prepared to give boys and girls, in classes of twenty each, in connection with thorough instruction in the elementary branches, the most approved form of hand and eye culture for pupils of this age. It is the aim of this department to give pupils the individual attention which would be impossible in any school with large classes. Special provision is also made in this department for the training of persons who purpose becoming sloyd teachers.

LIBRARY.

The library contains a collection of valuable works of reference, consisting of about 1,500 volumes, bearing chiefly on English literature, history, and natural science. The works on physics, chemistry, electricity, botany, zoology, etc., are kept in the various laboratories. The remainder of the library is located in a room adjoining the general assembly and study room. Through the generosity of Mrs. Jeanne C. Carr the school has received 300 volumes of valuable historical and scientific books.

DISCIPLINE.

The instructors of the Institute constantly keep in mind the development of self-governing, self-respecting, law-abiding men and women. The helpfulness of the ever-watchful friend takes the place of the educational police officer. Students are expected to attend whatever church their parents or guardians elect. Sixteen societies have houses of worship and pastors located in this city. Representatives of many of the leading denominations are found on the faculty, and a definite effort is made to establish in the community such a relationship for the student as is desired by the home.

ATHLETICS.

Every encouragement is given to the legitimate growth of athletics. Membership in any of the athletic organizations is subject to forfeiture for failure in any regular line of school work. The faculty committee on athletics may at any time cancel membership in any athletic organization for neglect of class, shop, or laboratory work.

HOMES FOR NON-RESIDENT STUDENTS.

Non-resident students will be able to find good homes in the community at from \$5 to \$6 per week. A number of families have, with the approval of the management of the Institute, arranged to open private homes for students where not only pleasant rooms and healthful fare can be assured, but where the general living and study habits of pupils will be carefully supervised. A list of such homes can be secured on application to the secretary, Frank J. Polley. The dormitory plan has been abolished, owing to the firm conviction that in so favored a community as Pasadena better home surroundings and more healthful social influences can be furnished for young people in the families willing to accept such responsibility than would be possible in any dormitory.

POLYTECHNIC HALL.

Most of the shops and laboratories of the manual training department are located in the Polytechnic Hall, which is a two-story brick structure with a frontage of 140 feet on Fair Oaks avenue, and 80 feet on Chestnut street.

WOOD SHOP.

The wood shop, which is located on the second floor, has been provided with twenty workbenches, at each of which four students can work daily. Every bench is provided with a drawer for each student who has occasion to use it, in which, under Yale lock, are placed the planes, chisels, and turning too's used by the student to whom that drawer is assigned. These tools are left to his care, for to sharpen and keep tools in proper condition for use involves probably as much skill as does their actual use. Accordingly, no two students are permitted to handle the same edged tools.

Each bench has a set of tools which are used in common by four students during the day, and comprise the following: One tri-square, one T bevel square, one foot square, one marking gauge, one pair of inside calipers, one pair of outside calipers, one pair of compasses, one block plane, one hammer, one mallet, one oil can, one oil stone, one backsaw, one handsaw, one rip saw, one screw-driver, and one 6-inch Coe's wrench. At the student's right hand on the bench is a 14-inch lathe, while at the opposite end of the bench is placed his bench stop and lightning grip wood-worker's vise. The shop is supplied with a large band saw for cutting up stock, and also a fine fret saw, which was given by the business men of the city. Besides these, the following, which are less often used, are at his disposal when needed: One combined rabbit, beading, and slitting plane, one plow plane, braces and bits, cabinet scrapers and files, carving chisels and veniers. He is thus equipped with all the appliances and tools necessary to do thorough work in joinery, turning, inlaying, and scroll sawing. A special pattern-maker's lathe and well-equipped bench is provided for the use of the instructor.

FORGING ROOM.

The forging room, situated on the first floor in the east wing of Polytechnic Hall, is equipped for 23 pupils.

The furnishing consists of five nests of Buffalo quadruple forges and three single forges. Each forge has a telescopic hood. The fires are urged by a No. 9 pressure blower and the room is kept reasonably free from smoke by a 60-inch exhaust fan.

The anvils are furnished with all necessary tools, such as hammers, hardies, swages, fullers, flatters, tongs, and squares. In addition to these tools for individual use, special sets of sledges, heading tools, set hammers, hot and cold cutting chisels, punches, calipers, taps and dies, drills, etc., are provided for general use. A hand blower, double emery grinder, combined hand and power drill, and four blacksmith vises complete the furnishing of the room.

PATTERN SHOP.

The equipment in this shop is similar to that of the wood shop, but more extensive. In addition, it is provided with a well-equipped molding bench, where the students may test their patterns and gain some knowledge or the principles of molding. The adjoining lumber room contains a band saw and a scroll saw.

MACHINE SHOP.

The machines in this shop, including a 55-horsepower engine, are of the latest style, having all the modern improvements. They were obtained through the generosity of citizens of Pasadena, at a cost of nearly \$10,000.

The shop contains the following machines: A 24-inch by 6-foot Powell planer; a Hendy shaper, 15-inch stroke; a 24-inch Prentiss Bros. drill; a Sigourney sensitive drill; Brown & Sharp's No. 1 Universal milling machine, with overhanging arm and universal milling head; a two-wheel emery grinder; a grindstone; a 24-inch by 10-foot Reed lathe, with compound rest; a 16-inch by 8-foot Reed lathe; four 14-inch by 6-foot Reed lathes, one of which has a taper attachment; two 14-inch by 6-foot Prentiss Bros. lathes; a 14-inch by 6-foot Putnam & Sons lathe; a 14-inch by 6-foot Hendey Norton lathe which has the latest improvements for screw cutting, also a compound rest, and two 12-inch by 4-foot speed lathes. It contains a bench provided with six machinist's vises. In the tool room is an 8 by 32 inch Mosely & Co. bench lathe, the countershaft having forward, reverse, and polishing speeds and an overhanging grinding counter. The lathe is furnished with hand and slide rests, wire and drill chucks, several special tools, and inside and outside grinding attachments.

The following is a partial list of tools in the tool room: One 24-inch, one 16-inch, and three 12-inch four-jawed independent chucks; three 12-inch, two 9-inch, and one 6-inch three-jawed universal chucks; cutters, end mills, and attachments for the milling machine; a set of twist drills from $\frac{1}{4}$ -inch to $1\frac{1}{4}$ -inches by 32ds; from $1\frac{1}{4}$ to 2-inches by 16ths; a set of hand reamers from $\frac{1}{4}$ -inch to $1\frac{1}{4}$ -inches by 32ds; a set of Rose reamers from $\frac{1}{4}$ -inch to $1\frac{1}{4}$ -inches by 16ths; a set of taps and dies from $\frac{7}{8}$ to $\frac{1}{4}$ -inch by 64ths, and taps from $\frac{1}{2}$ to 1-inch by 16ths; a full set of dogs and two sets of arbors. Revolving frame contains calipers, squares, etc. Other tools are in the drawers and hung about the room.

The check system is used in giving out tools, and the students in turn caring for the tool room.

SEWING AND DRESSMAKING ROOM.

The sewing and garment making room is located on the first floor. It has been equipped with four large tables furnished with a sufficient number of drawers to accommodate three classes of 16 members each in garment making. Seven standard sewing machines, a patent gas iron heater, pressing boards, together with necessary needles, thimbles, scales, tapelines, etc., for the use of individual students, constitute the equipment of this department. Adjoining the main sewing room a retiring room for fitting purposes is provided.

COOKING ROOM.

The cooking room is located on the second floor and is supplied with tables, upon which are gas stoves. Along either side of each table are the drawers containing the caps, aprons, sleeve protectors, notebooks, etc., of the two young ladies assigned to work at that side of the table. A drawer contains cooking utensils, mixing, measuring dishes, stirring spoons, kitchen knives and forks, etc., while in the cupboard beneath is a full assortment of stove and kitchen furnishings. At either end of the table, towels, lid lifters, etc., are hung. Two girls work at each stove, each student participating in every process called for in the instruction. A large dust-proof cupboard, containing meal and flour bins, dish closets, etc.; a large water heater, and Lowe patent gas range, and a large refrigerator and cupboard for furnishings are also provided.

MECHANICAL AND ARCHITECTURAL DRAWING ROOM.

This is an east room, situated on the second floor, and is well lighted. It is provided with tables which have lockers for each student. Valuable works of reference for use in architectural or engineering design are kept in the room for the use of students. During the past year the library for reference has been enriched by the gift of a number of volumes of the American Machinist, by Mr Clinton Brooks, of Pasadena. This room is also provided with models and casts illustrating the five orders of architecture. A number of valuable models for work on machine design have been imported during the past year.

CHEMICAL LABORATORY.

The chemical rooms occupy part of the second floor of Polytechnic Hall. The main laboratory is furnished with experiment benches, fitted with water, gas, shelves for reagents, and ample drawerspace for 48 students. A hood for experiments involving the creation of noxious gases is fitted with drying closet, steam evaporating bath, water, gas, and automatic hydrogen sulphide generator. A table with 2-inch cement top is used for glass working and furnace operations. Half the room is at present used for recitations and lectures, being furnished with chairs and teacher's experiment table, with water, gas, and pneumatic trough.

Adjoining the main laboratory on the north is a room used as a balance and burette room. It is fitted with eight burettes and a short-arm analytical balance, sensitive to one-tenth milligram with a load of 100 grams. This room also contains the library, which consists of a carefully selected list of books, which are of every-day use to the students.

Directly south of the main laboratory is a room fitted with shelves and cases for chemicals and apparatus. This contains the instructor's private experiment table, an automatic water still, and a closet for electrolytic work with both dynamo and storage battery current. A complete supply of glassware and chemicals for general and analytical work is kept on hand and furnished to the students at cost.

PHYSICAL LABORATORY.

This department occupies three rooms on the first floor of the Polytechnic Hall. The physical laboratory is a large, well-lighted room, fitted with tables, gas and water pipes, lockers and cases which contain the usual physical apparatus for both qualitative and quantitative experiments.

Adjacent to this laboratory is the physical lecture room, and adjoining this on the north is the testing laboratory. This has seven large piers built independently of the floor so as to be free from vibration. The equipment of this room consists of one Edison generator, one motor, two Brackett dynamometers and a storage battery, and such instruments as the Deprez D'Arsonval mirror, Thompson tripod, Queen horizontal reflecting, Universal tangent, and Queen ballistic galvanometers; ordinary tangent galvanometers, post-office and ordinary resistance boxes, Queen testing set, earth inductor, Queen quadrant electrometer, $\frac{1}{2}$ microfarad, Weston volt meter, ammeter, Siemen's electro-dynamometer, Bunsen photometer, standard cells, slide meter bridges, scales, and telescopes. A well selected library is in the laboratory for reference.

For the use of the electrical engineering students is an Otto gas engine of 20-horsepower for running the shops and testing; a 55-horsepower McIntosh, Seymour & Co.'s engine, for supplying power and testing; a 60-horsepower horizontal multitubular boiler, and oil fuel apparatus, gauges, indicators, etc. These are in the charge of J. M. Bush, a steam engineer of experience.

EAST HALL.

This building stands on Chestnut street and Raymond avenue, and cost, finished and furnished, nearly \$40,000.

On the first floor are class rooms for Latin and Greek, mathematics, history, and the preparatory department. A double office is located at the left of the main entrance, while at the rear are cloak and toilet rooms for both ladies and gentlemen.

The second floor is given up to a large assembly room, a library for the accommodation of 8,000 volumes, cloak and toilet rooms for ladies and gentlemen, and the quarters of the department of biology.

On the third floor are located the modern language room, the free-hand studio, the museum, and the stenographic and typewriting room.

BIOLOGICAL LABORATORY.

The biological apartments are located on the second floor. Facing the north is the 19 by 50 laboratory lighted by 9 large windows, with 7 V-shaped tables, a sink, an aquarium, a glass-sided cage, and a rack for biological periodicals. Against the south wall are built 74 lockers, and 4 cases for books and reagents.

The laboratory is furnished with 17 Bausch & Lomb compound microscopes, 30 dissecting microscopes, 30 sets of dissecting and microscopic tools, 2 microtomes, 2 camera lucidæ, injecting apparatus, culture dishes, a dry and steam sterilizer, and other apparatus used in bacteriological work. A Universal Bausch & Lomb stand is equipped with the appliances for work in bacteriology and other advanced work. A gas pipe, to which Bunsen burners can be attached, is located at the end of each of the microscopic tables.

In the cases (to which all students have access after making their dissections, notes, and drawings) are 90 volumes of zoological works and 30 volumes of works on human anatomy and physiology.

An adjoining room contains cases for instruments and material, and an herbarium of about 4,000 species of plants ranging from the lowest algæ and fungi to the highest flowering plants. This apartment is also fitted up as the instructor's private workroom.

South of the instructor's room is a large, well-lighted class room. In it is placed a case for the student's herbaria and a case for alcoholic specimens. The windows are furnished with close-fitting shutters, making it possible to quickly change the room into a dark chamber for the projection of microscopic objects by solar light. In the south side of the room is a bay window used for work in physiological botany. On the floor above is a museum room fitted with cases which contain the geological specimens belonging to the Institute.

FREE-HAND DRAWING, PAINTING, AND DESIGNING ROOM.

This room is fully equipped with all necessary studio appointments. Side light and skylight are both available. The equipment is as follows: Adjustable desks, which can be transformed into tables or easels at any angle desired; stationary desks, suitable for the execution of large designs, which also contain drawers for students' supplies; a large table with water connection adapted for mounting designs and grinding colors; blackboards for class demonstrations of perspective principles; a full line of wooden models, type solids, from which first lessons in perspective are given; a case of bric-a-brac and objects of still life, furnishing material for sketching; a complete set of charts used in study of historic ornament and design; plaster casts of historic ornament, natural-leaf forms, masks, heads, and full-length figures which serve as models in the rendering of light and shade in charcoal drawings.

SLOYD ROOM.

The sloyd department, located in the basement of the East Hall, is equipped with twenty sloyd working benches, each of which is provided with a set of high-grade cabinetmaker's tools. Charts, models, blackboards, and cases divided in compartments where students keep their work, material, drawing instruments, etc., are also provided.

CLAY ROOM.

The work in clay modeling is carried on in a light, well ventilated room on the main floor of East Hall. The department is equipped with a fine selection of casts of ornament, 118 having been added this year. It is also furnished with a complete set of anatomical charts, besides the usual lockers, stands, etc., for clay work.

WOOD CARVING ROOM.

The department of wood carving occupies two rooms in East Hall, one of which is fitted with work tables, lockers with tools for students' use, and cases for exhibition of work. The instructor's private room adjoins this and is used for special lines of advanced work. These rooms are fitted with a good selection of casts and charts showing the various styles of historic ornament.

SOCIETY HALL.

A good room on the basement floor is devoted by the Institute to the use of the literary societies. It is seated with chairs and lighted by electricity. A first-class piano is also part of its equipment.

SLOYD SCHOOL.

The urgent need of educational manual training in connection with the work ordinarily done in public schools inspired the establishment of a sloyd department in the Institute. Pupils will be admitted to this department who have completed the usual third year of the public school. The work, as arranged for this department, consists of two lines: (1) The ordinary book work, and (2) that of sloyd proper.

SCHEDULE OF WORK.

Group 1.—Arithmetic, fundamental operations; English; history and geography; science, elementary work on plants and animals; sloyd.

Group 2.—Arithmetic, review fundamental operations, factoring, greatest common divisor, least common multiple, simple work in fractions; English; history and geography; science, elementary work on plants and animals; sloyd.

Group 3.—Arithmetic, fractions, denominate numbers, and supplementary work; English, language lessons, Hans Anderson's Fairy Tales, Wonder Book, Poets and Heroes; history and geography, Eggleston's First Steps in United States History, advanced geography with modeling; science, elementary work on plants and animals; sloyd.

Group 4.—Arithmetic, applications of percentage and supplementary work; English, elements of grammar and analysis, Kingsley's Greek Heroes, Snow Bound, Six Selections from Sketch Book, Hiawatha; history and geography, Fisk's United States History begun; geography completed; science, simple experiments in physics; sloyd.

Group 5.—Arithmetic reviewed and elementary geometry; English, grammar completed, Lady of the Lake, Evangeline; history and geography, United States history completed, geographic reviews; science, simple chemical experiments; sloyd.

1. The course in English includes a thorough drill in writing, spelling, and composition.

2. The following materials are needed by every participant in sloyd classes: A drawing board 18 by 24 by $1\frac{1}{2}$ inches, a "T" square, a triangle, a set of drawing instruments, thumb tacks, drawing paper, pencils, and erasers.

The sloyd work is arranged in four courses. It proceeds from very simple to more complex forms, introducing the tools and exercises at proper intervals. This methodical arrangement and consecutive nature permit its application to the different groups of pupils.

The entire sloyd course consists of drawing and woodwork.

The drawing course consists of geometrical constructions; principles of representation, representation by use of scale; projections, orthographic and isometric; inking and tracing; perspective, linear.

The woodwork consists of the making of thirty-seven sloyd models, of which the first twelve constitute Course I; the next nine, Course II; the following ten, Course III, and the last six, Course IV. Course IV is followed by a course in wood turning consisting of fifteen models.

TEACHERS' TRAINING CLASSES.

Admission to these classes can be gained by persons who are graduates of high schools, normal schools, or colleges, or by persons passing the special examinations required. A teacher's certificate will also admit and exempt from examinations.

TEACHERS' TRAINING COURSE.

The work of this course is as follows:

Manual work.—Mechanical drawing (including 1, geometrical constructions; 2, principles of representations; 3, representation in reduced size by the use of scales; 4, projections, orthographic and isometric; 5, inking and tracing; 6, perspective, linear; 7, blue printing). Completion of thirty-six sloyd models. The completion of twelve wood-turning models. Sharpening and care of tools.

Theoretical work.—The psychology of sloyd; pedagogy of sloyd; history of sloyd; mechanics of sloyd; study of materials, botanical structure and properties of wood, etc.

The drawing involves not only inventional and descriptive geometry, but also an appropriate amount of free-hand drawing, and teachers who complete the sloyd course will be prepared to teach industrial drawing.

General requirements.—Members of these classes are required to take a course in physiological psychology and to pursue a series of systematic readings on the subjects of manual training and sloyd. For the reading course, the students in these classes are required to provide themselves with the following books: The Theories of Educational Sloyd, by Otto Solomon, \$1.25; Industrial Instruction, by Robert Seidel, \$1; Linear Drawing and Projection, by Ellis A. Davidson, \$1.50.

Length of course.—As there is a marked difference in the capabilities of individuals, it is difficult to fix the absolute limits of the normal course in sloyd. While an active student may complete the models and drawings involved in many of the so-called teachers' courses in a few months, or even a few weeks, it is not possible to master the philosophy of sloyd, which embodies the underlying principles of all educational manual training, in any such time. Three terms of three months each will be adequate time for students of the maturity and preparation indicated above to fit themselves as sloyd teachers.

No student will be awarded a sloyd teachers' diploma unless the entire course has been finished.

Method of instruction.—The instruction will involve both individual and class methods. The general use of tools, working positions, sharpening of tools, etc., are all illustrated by class instruction. This is also the case in the mechanical drawing which precedes the making of each model. All general principles are illustrated on the blackboard as in any other subject. Individual instruction is predominant, however, and each student receives individual observance, guidance, and instruction. The director does not touch the work, which is to be prepared and finished entirely by the student teacher.

ACADEMY.

Students holding a certificate of graduation from a California grammar school or any other school of equivalent grade will be admitted to the academy without examination. All other applicants will be subject to examination in arithmetic, grammar, English, geography, and United States history. Information concerning subject-matter and amount of work required in these lines will be found in the schedule of work for sloyd school.

SCHEDULE OF WORK.

First year.—English, I; mathematics, I; Latin, I; or French, I; or German, I; or physical geography; drawing, I; and shopwork, I or V.

Second year.—English, II; mathematics, II; Latin, I or II; French, I or II; German, I or II; Greek, I; history, I; zoology, I; botany, I; chemistry I; drawing, II, and shopwork, II or VI.

Third year.—History, I or II. Some two of the following: English, III; mathematics, III; Latin, I, II, or III; French, I or II; German, I or II; Greek, I or II; botany, I or II; zoology, I or II; chemistry, I or II; physics, I. drawing III; and shopwork, III or VII.

Fourth year.—History, III. Some two of the following: English, IV; mathematics, IV or V; Latin, II, III, or IV; French, II; German, II; Greek, II or III. Zoology, I or II; botany, I or II; Physics, I or II; chemistry, I or II. Drawing, IV, and shopwork, IV or VIII.

Roman numerals refer to courses outlined hereafter.

The above is the order of work recommended. In special cases deviations from this schedule are permitted, provided they do not conflict with the following requirements:

If Latin, French, or German be chosen it must be pursued for not less than two years to receive credit for the work.

A subject once elected can not be dropped after two weeks from the time of choice, and must thereafter be pursued until successfully completed. All subjects extend through the entire year.

Each student must, in order to complete this course, take not less than two years of English; two of mathematics; two of history (one of which must be devoted to course 3); four years of drawing, and four years of shopwork.

For graduation from the Academy, 36 credits are required. Two credits are given for the successful completion of each annual subject except drawing, for which one credit is given.

Every graduate must have pursued for the full four years the study of (1) language, or (2) mathematics, or (3) natural science, or (4) mathematics and natural science.

COLLEGE.

The requirements for admission to the college department are as follows:

The completion of three years of the academy course; or the completion of a course in an accredited high school or an approved preparatory school; or passing an examination upon English 1 and 2, and mathematics 1 and 2, and any eight of the following subjects, outlined in the course of study: Physical geography, botany 1, botany 2, zoology 1, zoology 2, physics 1, chemistry 1, Latin 1, Latin 2, Latin 3, Latin 4, German 1, German 2, French 1, French 2, Greek 1, Greek 2, history 1, history 2, mathematics 3, English 3. Any applicant offering Latin, French, or German must present at least two years of each.

The work in this department is entirely elective. Each student who is a candidate for a degree must choose a major subject which is the work of one professor, who shall prescribe the necessary or desirable collateral work. Such major and accessory work shall not constitute more than two-thirds of the work offered for a degree and the amount subject to prescription by the professor shall not exceed one-third. The remainder of the work may be chosen from any of the courses offered with the exception of mathematics 1 and 2 and English 1 and 2, and physical geography. The degree B. A. will be granted to students having satisfactorily completed four years' work of at least three recitation or lecture periods per day. Upon a basis of two credits for a year's work in each subject, 24 credits would thus be required for graduation.

The institution reserves the right not to organize classes in any given subject, unless at least eight students elect said subject.

Candidates for admission to college classes should make application as early as possible, indicating the subjects they purpose electing.

Eight pages follow, giving accounts of the several Departments, and details of the courses of study in the Academy and the College. The courses comprise Mathematics, the Ancient and Modern Languages, English Literature, History, Chemistry, Physics, Biology, etc. Then are given the following details of the Industrial and Shop-work courses:

SHOP WORK.

WOOD-WORK.

I. This work consists of work in joinery, turning, and cabinetwork. It has been the desire to arrange a course which would be valuable, considering it from both an educational and industrial standpoint. The exercises have been designed so that there would be a gradual growth in the difficulty of construction, and at the same time contain practical, useful, and æsthetic elements. Such a series of exercises would naturally call forth a gradual development in the ability of the student and also cultivate a sense for beauty and proportion.

The work is given to the student by means of a blue print taken from a working drawing. From these he constructs his model. These drawings are made with the greatest care and accuracy. Helpful notes in reference to the work accompany each drawing. This method acquaints the student with the reading of accurate working drawings, and the working therefrom. After the model has been made he then makes his own working drawing from it.

The course in joinery is composed of 18 progressive exercises, involving the construction of 16 different joints, the drawing of analytical and free-hand curves, and the use of 50 different tools and machines.

The student is allowed to exercise his individuality in the exercises in inlaying and cabinetwork. These exercises are made from his own drawings and after his own designs, which are submitted to the instructor before the work is begun.

The course in turning consists of 15 progressive exercises given in the following order: Center work, face-plate work, chucked work, and long work.

The above problems in woodwork are taken in the order of joinery, inlaying, turning, and cabinetwork. This work is calculated to be finished by the average student in one school year, working one and one-half hours daily.

At the end of the year there will be held a written examination upon the methods employed and the technical terms used in the work.

FORGING.

II. Forge: Mechanism of and care of forge; preparation of forge for fire; building and managing fire. Tools: Instruction in the care and use of tools. Processes: The processes involved in the year's work are drawing, bending, upsetting, different kinds of welding, punching, drilling, fullering, swaging, cutting cold, chipping, cutting hot, splitting, twisting, filing, brazing, hardening, tempering, and ornamental ironwork.

Tempering: Hardening in water and oil, tempering or drawing, temperatures and colors used, and processes in tempering tools for wood and iron work.

Ornamental ironwork: At the close of the year each student will be required to design some special piece involving the various elements of forging mastered.

PATTERN MAKING AND ELEMENTARY MACHINE-SHOP PRACTICE.

III. The work in pattern making alternates with that in the machine shop. The course commences with the simpler forms of pattern making embodying the fundamental principles of the subject, such as allowance for shrinkage, finish, etc. Later more difficult work is taken up, involving core-making.

Each student is expected to make for himself or assist in making patterns for a finished piece of work. For example, during the past year one student has made patterns for a breech-loading brass cannon, 20 inches in length; another a full set of patterns for an 8-inch swing wood lathe; another a set of patterns for a 2-horsepower water wheel, Pelton style; another a set of patterns for a gas engine of new design; the balance of the class have made a full set of patterns for a 4-horsepower automatic steam engine with valve of new design.

One molding bench is provided where the students test their patterns.

Work in machine shop comprises chipping and filing, use of taps and dies, reamers, etc., hand-tool work in speed lathes, work on engine lathes, turning, boring, screw cutting, outside and in.

ADVANCED WORK IN PATTERN AND MACHINE SHOP.

IV. During the course each student will work on the following machines, besides the lathes: Planer, shaper, drill press, and milling machine. All special tools are made by the students and tested with micrometer calipers.

Special attention is given to accuracy in measurement, finish of work, care of tools and machines.

Example of work done during the past year: Making planer bolts, face plates for wood lathes, mounting chucks, finishing of castings made from patterns in above list; three engines are being made from the steam-engine patterns, one of which has been finished as class work, the other two are being made by two students, each one doing the entire work on the engine alone.

PLAIN SEWING.

V. (a) Five days a week, two periods a day. The fundamental principles of hand sewing, basting, running, hemming, hemstitching, tucking, felling, sewing on lace, darning, etc.

(b) Machine sewing; plain stitching, hemming, tucking, and gathering.

(c) Continuation of plain sewing. Practical experience in shopping by each pupil. Neatness and accuracy demanded in the work.

During the year a complete suit of underwear must be made by each pupil; also a shirt waist, a cotton dress, and a wrapper or dressing sacque. Same preliminary study in designing for the dressmaking course will be done.

MODELING AND CARVING.

VI. (a) Modeling of simple leaf forms, followed by the various styles of historic ornament from the cast and from the flat, including original designs, masks, busts, and bas-relief. Instruction in the principles of decorative design as applied to wood, metal, and stone, the principles of form and proportion involved in designs of various kinds, and the adaptation of modeled ornament to different surfaces.

(b) Instruction in the care of tools; their use by practice in cutting to a line and to a given depth; Egyptian and Greek ornament studied and expressed by lining and incising; the Moorish, Byzantine, Romanesque, Gothic Roman, and Renaissance styles in succession, advancing from simplest to more complicated forms.

Special: (a) Work on busts and full-length figures from the antique, the successful completion of one of the latter being required of each pupil who receives the credits for this course.

(b) The principles of design studied by taking the scroll framework as a basis for developing surface patterns, continuous scrolls and the various forms of radiating designs; practical application of these principles to designing and ornamenting furniture, such as easels, stools, chairs, jardinières, bedsteads, desks, etc. The successful completion of a piece in Italian Renaissance is required of all students before they receive the regular credit for this course. The growth of woods and their adaptability for various uses is studied, and pupils are taught to select material and have it cut and dressed. They are also instructed in working drawings, light carpentry, and in finishing work in various styles of polish.

(c) Carving in the round is begun with work on heads and followed by full-length figures.

COOKING.

VII. (a) The fundamental principles of cookery and practice in the preparation of vegetables, soups, meats, cereals, biscuits, eggs, cost of materials; care of a kitchen; serving a simple dinner.

(b) Instruction in preparation of more complicated dishes; bread, fish, oysters, pastry, croquettes, game, etc.; care of silver and glass; setting and serving a table; table etiquette.

(c) Entrees, salads, deserts, cake, jellies, and creams; giving of entire breakfasts, luncheons, and dinners; ordering; proportions of food needed; garnishing; short course in invalid cookery; carving.

(d) Presentation of the physiology of nutrition by special lecturer.

(e) In connection with cookery, the following topics will be taken up:

Classification of foods.

Water, boiling, simmering, its action on starch and albumen.

Practical application in cooking meats and vegetables.

Composition of foods.

The cheapest and most wholesome foods.

The greatest amount of nutriment obtained for 25 cents.

Digestion, assimilation.

Study of yeast plant.

Properties of carbonic acid gas.

Fermentation, lactic, vinous, acetic.

Baking powders, soda, cream of tartar.

Flour, composition, food value.

Adulteration of foods.

Tea, coffee, alcohol: their effects on the system.

Disinfectants.

Spices.

General plan of household work.

House cleaning.

Care of every portion of a house.

Preparation of a dietary for six persons for one week, not to exceed \$10.

Invalid cookery, dietary.

Table etiquette.

Duties of a cook.

Duties of waitress.

Special lectures on Chemistry of Cookery, Bacteriology.

Throughout the year Dietaries and Nutrition will be kept constantly in mind, the object being as much, or more, to study the scientific principles of foods, as to prepare palatable viands.

DRESSMAKING.

VIII. (a) This course is devoted to the principles of dressmaking: Drafting a basque and sleeves from actual measurements; cutting, fitting, and finishing a basque; cutting and making a skirt; choice of materials, price, quantity, and amount needed.

(b) Drafting continued: Cutting of fancy fronts to basques; pupils are required to plan an entire dress with written description of it before beginning, including collar, trimming, sleeves, etc.; making of dress.

(c) In connection with the dressmaking the cultivation of taste will be studied. The proportion of the human figure. Dress as appropriate to individuals, sketches for dresses made in pencil and color. Harmony of color in fabrics.

(d) With the foregoing, special attention to bearings of dress on health; how to dress to preserve health and strength; rational dress reform studied; presentation of physiology of dress by special lectures.

(e) During the year three gowns and a house jacket or waist will be required from each pupil.

DRAWING, DESIGNING, AND PAINTING.

FREE-HAND.

1. (a) Principles of perspective as applied in the drawing of simple type forms, beginning with sphere, cube, cylinder, etc., followed by objects based on type solids.

Parallel and angular perspective, convergence of line, vanishing points, and foreshortening are demonstrated on blackboard by the most simple and practical method. Perspective drawings made of wood and iron shop exercises.

Outline, shade, shadow, and artistic rendering of line are developed in execution of perspective drawings.

Drawings of scrolls; beginning with the Egyptian, the Grecian and Roman follow in natural sequence.

Original adaptation of scroll in prescribed borders, spandrels, and geometric fields.

Original scroll designs for wrought-iron work as applied in the iron shop course.

Original designs adapted to wood carving.

Study of light and shade and breadth of treatment are developed by execution of large charcoal drawings from plaster casts of natural leaf forms and conventional rosettes.

II. (a) Perspective as applied in the drawing of groups of objects; relative proportion and study of values; light and shade; the artistic grouping of objects; study in composition; combining fruit and flowers with objects of still life. Drawings are made of the same in pencil, pen and ink, sepia, and charcoal. Small sketchy effects, in which impressions of light and shade are jotted down, are the outgrowth of the pencil and pen-and-ink work. Sepia and charcoal studies are executed on a larger scale, requiring careful study of details.

Students from Biology Department bring specimens of fungi and insect life and reproduce them in ink and water colors. Charcoal drawings of the mask and head, from plaster casts of Roman Emperors, Venuses, and mythological personages, which create additional in English Department. Study of historic ornament and original adaptation of the same in designs for tiles, bookcases, and wall paper. Color is first introduced by flat washes of water color to these designs. Fresco colors are used in rendering the deep, rich coloring required in Saracenic designs. Scheme for a room in which ceiling, side wall and frieze, and carpet are made to harmonize in color and design complete the second-year course in designs.

III. (a) Charcoal drawings of full-length figure from plaster casts of Greek Slave, Venus de Milo, etc. Painting in water colors from groups of still life, using full palette of color in portrayal of fruit and flowers combined with bric-a-brac. Rapid pencil sketching from life of fifteen-minute poses.

Designing from natural plant forms, conventionalizing flowers and applying the same to wall paper and silk designs.

IV. (a) Paintings in oil; draperies and genre; study of composition and illustrating; advanced work in designing for pottery and stained-glass windows; study of the history of art; talks given on historic ornament and artistic anatomy; making portrait studies from living costumed model in charcoal, ink, water color, and oil.

MECHANICAL.

It is designed to make the course in mechanical drawing auxiliary to other work at the Institute. Those who are intending to pursue special lines of work will have such work as seems best adapted to their needs. Those who desire it, for instance, can take a course which shall involve much study of the laws of perspective, using one of the best treatises in English, Ware's *Modern Perspective*. Again, others may take work especially adapted to the needs of civil, mechanical, or electrical engineers.

When work not in the regular courses is taken by students, it will be credited as regular course work should the student desire to enter the regular course at some subsequent time, provided that in quality and quantity it is a fair substitute for regular course work. At all times endeavor will be made to adapt the work to the needs and ability of the individual student.

I. (b) Selection and use of drawing instruments; fundamental principles of orthographic projection with applications in making working drawings of articles constructed in the wood shop, illustrating different constructions used in carpentering and cabinetmaking. Rectangular and circular forms are chiefly used in these models and other forms involving more difficulty are gradually introduced. Tracing and blue printing of working drawings. For those who do not take the course in woodwork models and copies are provided.

II. (b) Shop drawings of iron, brass, and woodwork; development of prismoidal, pyramidal, and conical surfaces, and projections of the intersections of various surfaces with each other; isometric and cavalier projections; simple constructions of shades and shadows; fundamental principles of perspective; simple constructions of shades and shadows in perspective; methods of coloring drawings.

III. (b) Drawings of plans, elevations, and sections of machines; drawings of patterns to be made in the pattern shop; drawings in perspective of furniture, rooms,

and buildings from actual measurements by the methods practically used by architects and designers; drawings of architectural detail; drawing of involute and epicycloidal gearing from models and with odontographs; topographical drawing; laying out railway curves; profiles, etc.

IV. (b) Drawings of machines with practice in design, using the principles laid down by Anwin, Reanleaux, and others; drawings of the architectural orders; methods of artistic rendering used by architects, applied to drawings of buildings; perspectives of curved forms with their shades and shadows; elements of graphic arithmetic, composition and resolution of forces, studied graphically with diagrams of stresses for roof and bridge trusses.

STENOGRAPHY.

A special department of stenography, typewriting, etc., independent of the other departments of the Institute, has been in operation for the past three years. Its members pay a fee of \$50 for the course or, by special arrangement with the instructor, a fee of \$10 per month for short terms.

The purpose of the course in this subject is the equipment of young men and women for practical service as stenographers and amanuenses. The time allotted to the work is six months, in which the student is expected to devote not less than one-third of each day to this particular department. Certificates will be granted to all students who acquire the ability to write at the rate of one hundred words per minute for ten consecutive minutes, matter not previously seen by them, and who then are able to transcribe the same immediately. Pupils who have attained this degree of efficiency have mastered the principles of shorthand, so that the highest skill and accuracy is to be reached thereafter simply by practice.

TYPEWRITING.

The students are given thorough training in the use and care of the Densmore, Remington, and Caligraph machines. No student will be permitted to take up this course who can not devote to it at least one-third of his time. To obtain the certificate of the school, pupils must demonstrate their ability to carefully copy new matter at the rate of forty words a minute for ten consecutive minutes. The instruction in this work aims to reach the individuals so that the student may be permitted to advance as rapidly as his ability warrants. The following outline will indicate the chief features to which special attention is paid: (1) The mastery of the keyboard, including accurate fingering and evenness of touch; (2) graded word exercises; (3) mastery of commercial, legal, and legislative phrases; (4) special drill in spelling, punctuation, capitalization, business correspondence, etc.; (5) work on architectural specifications, legal testimony and statutory forms; (6) speed exercises, including tests of speed in writing upon the machine from dictation; (7) letterpress copying and manifold; (8) special training in the mechanism, adjustment, repair, and care of machine.

BOOK-KEEPING.

The purpose of this work will be (1) the mastery by the general student of the elements of accounts; (2) the special training of young men and young women for position as bookkeepers and accountants.

The study, then, in this work will include not only mastery of the elementary principles, thorough drill in journalizing and posting, the making of the trial balance and the balance sheet, but will familiarize the student with the various auxiliary books. Thorough drill will be given in rapid calculation, the computation of interest, the writing of notes, checks, receipts, etc. Students desiring to continue the work through the year will have special opportunity to do so.

GENERAL INFORMATION.

Students seeking admission to any department of the Institute will be required to furnish satisfactory evidence of good moral character and of honorable demit from the school with which they were last connected. No student will be admitted whose bills for the previous school year have not been settled in full, or who has any charges standing against him on the books of the institution.

Examinations for admission to any department, under the terms outlined on pages 13 to 15 of this catalogue, will begin on Monday, September 16, 1895, at 10 o'clock a. m.

Students of maturity desiring to take special courses should file application with the secretary at the earliest possible date.

Term bills will be payable strictly in advance and students should submit secretary's receipt for the same to each instructor whose classes he may seek to enter. The tuition fee, which is uniform for all departments, and without reference to amount of work pursued, is \$30 per term. Each student will also be required to make a deposit of \$5 to cover material used, breakage, injuries or loss in libraries, laboratories, shops, and studios. Students who work in more than one shop and one laboratory may be required to make an additional deposit. Such deposits must be kept full from term to term. Any unearned balance of the sums thus deposited will be returned to the student at the end of the year.

Students can obtain good board in homes approved by the officers of the Institute at from \$5 to \$6 per week. Parents desiring for their sons and daughters homes where they will be under special and careful guardianship can be recommended to the same on application to the secretary. In some cases members of the faculty will take students into their homes and direct their study and living.

For further information address

President CHARLES H. KEYES,
Throop Polytechnic Institute, Pasadena, Cal.

The following statistics of attendance in the several departments of the Institute are given for the school year 1894-95:

SUMMARY.

Girls.....	85	Academy	170
Boys.....	216	College.....	13
Resident students.....	157	Teachers' training class	10
Nonresident students	144	Special students.....	22
Sloyd school.....	86	Total enrollment	301

The following lists give the personnel and organization of the Corporation and of the Faculty of the Throop Polytechnic Institute in 1895-96:

Founder.—Hon. AMOS G. THROOP. Born at De Ruyter, N. Y., July 22, 1811; died at Pasadena, Cal., March 22, 1894.

Board of Trustees.—E. E. Spaulding, A. M., Pasadena, 1895; W. E. Arthur, Esq., Pasadena, 1895; Hon. F. C. Bolt, Pasadena, 1895; Walter Lindley, M. D., Los Angeles, 1896; Mrs. Ellen I. Stanton, Pasadena, 1896; John Wadsworth, Pasadena, 1896; E. L. Conger, D. D., Pasadena, 1897; Mrs. Louise T. W. Conger, Pasadena, 1897; C. B. Scoville, Esq., Pasadena, 1897; C. D. Daggett, Pasadena, 1898; Hon. H. M. Hamilton, Pasadena, 1898; President C. H. Keyes, Pasadena, 1898; Hon. P. M. Green, Pasadena, 1899; Hon. T. P. Lukens, Pasadena, 1899; Norman Bridge, M. D., Pasadena, 1899.

Officers of the Board.—Hon. P. M. Green, President; Rev. E. L. Conger, D. D., Vice-President and general agent; F. J. Polley, Secretary; Hon. C. B. Scoville, Treasurer.

Executive Committee.—Hon. P. M. Green, President O. H. Keyes, W. E. Arthur, Esq., Rev. E. L. Conger, D. D., Norman Bridge, M. D.

Officers of Instruction and Government.—Charles H. Keyes, A. B., President, education; Millard M. Parker, A. M., Vice-President, Greek and Latin; Alfred J. McClatchie, A. B., biology; Sarah E. Sprague, Ph. D., English language and literature; Arthur L. Hamilton, mathematics; Herbert B. Perkins, S. B., mechanical drawing and civil engineering; Wallace K. Gaylord, S. B., chemistry and mathematics; William H. Parker, machine and pattern shopwork; Thomas M. Gardner, B. M. E., physics and electrical engineering; N. Saunders, A. M., French, German, and Spanish; Frank J. Polley, B. L., Secretary, history and civics; Alice Campbell, sewing and cooking; Charles H. Wright, smithing and forging shopwork; Charles N. Chambers, S. B., joinery, turning, and general woodwork; Mary L. Allis, clay modeling and wood carving; Charles A. Kunou, sloyd; Fannie Fern Sterrett, free-hand drawing; Bonnie Bunnelle, English, geography, and writing, in preparatory department; Warren Loree, B. S., mathematics, United States history, in preparatory department; J. R. Meskimons, mathematics and English, in preparatory department; Millie A. Morse, typewriting and stenography.

Besides the statements given in the catalogue, the Institute has issued a leaflet showing in detail the course in "Sloyd." As this is a very comprehensive setting forth of the distinctive features of this

kind of Manual Training, it may be found serviceable to those educators wishing to investigate this form of elementary industrial school work ; and is, therefore, given here in full :

THROOP POLYTECHNIC INSTITUTE,
DEPARTMENT OF SLOYD,
Pasadena, Cal., January 8, 1895.

The urgent need of educational manual training in the public schools of the Pacific Coast, inspired the establishment of a Sloyd department in connection with the Polytechnic Institute.

Well aware of the fact that the advancement of the cause of education manual training—as well as its introduction into our public schools—can be effected only through the public school teachers, we take pleasure in announcing the outlines of the Sloyd courses offered to teachers.

At the outset it must be understood that our arguments and plans for the spread of the subject of Sloyd are based on no cheap ends of utility, but upon the deepest educational principles and upon the recognition of the educational demands of the times, for in the present condition of our public schools individuals do not receive that proportionate training of those faculties that will best fit them for life. In other words, the individual does not receive such training as will tend to make him productive in thought and deed. For, to effect productiveness in thought, requires the conjugate and interdependent training of the physique.

The mind, trained excessively at the expense of the physical powers, is not healthy, and can not, consequently, be productive in thought. On the other hand, there is no such thing as training the hand to do and the eye to see except in conjunction with the training of the mind.

True hand and eye training, then, involves and effects the best mind training, and, in fact, we can not conceive of an absolute mind training separate from either eye or hand training. These are some of the theoretical reasons for manual training. The practical or the social reasons why the pupils of the public schools should receive such training are found in the conditions of his environments in the present age.

Sloyd is a potent means by which such simultaneous mind and body training is effected, and to this end we desire to place this training within the reach of the teachers of southern California, in order that through them it may find its way into our public schools.

Although a circular of information has been issued previously, the fact of increased attendance necessitates a second and more complete form of announcement.

The Sloyd Department consists of : (1) Teachers' training classes ; (2) Students' classes ; (3) Childrens' classes.

TEACHERS' TRAINING CLASSES.

Admission to these classes can be gained only by persons who are graduates of High Schools, Normal Schools, or Colleges, or by persons passing the special examinations required. A teacher's certificate will also admit and exempt from examinations.

TEACHERS' TRAINING COURSE.

The studies and manual work in this course are classified as follows :

Manual work.—Mechanical drawing ; completion of thirty-six Sloyd models ; the completion of twelve wood-turning models ; sharpening and care of tools.

Theoretical work.—The Psychology of Sloyd ; Pedagogy of Sloyd ; History of Sloyd ; Mechanics of Sloyd ; Study of materials, botanical structure, and properties of wood, etc.

SLOYD AND DRAWING.

Sloyd and drawing are co-related. They are, in fact, inseparable, for there is an inner organic connection between those subjects.

As no methodical work in material, especially wood, can be done, except after the performance of some outline drawing, the drawing must precede the woodwork ; and one of our capital aims is to combine manual instruction organically with drawing instruction. For without this organic connection the sloyd, as well as any other form of manual training, will not effect mind training.

COURSE IN DRAWING.

The course in drawing includes the following subjects : (1) geometrical constructions ; (2) principles of representation ; (3) representation in reduced size by the use

of scales; (4) projections, orthographic and isometric; (5) inking and tracing; (6) perspective, linear; (7) blue printing.

The Drawing involves not only inventional and descriptive geometry, but also an appropriate amount of free-hand drawing, and teachers who complete the Sloyd course will also be able and prepared to teach what is termed Industrial Drawing.

GENERAL REQUIREMENTS.

Members of these classes are required to take a limited course in Psychology, and to pursue a series of systematic readings on the subjects of manual training and Sloyd.

For the reading course, the students in these classes are required to provide themselves with the following books: *The Theories of Educational Sloyd*, by Otto Solomon, \$1.25; *Industrial Instruction*, by Robert Seidel, \$1; *Linear Drawing and Projection*, by Ellis A. Davidson, \$1.50.

LENGTH OF COURSE.

As there is a marked difference in the capabilities of individuals it is difficult to fix the absolute limits of the normal course in sloyd. While an active student may complete the models and drawings involved in many of the so-called teachers' courses in a few months or even in a few weeks, it is not possible to master the philosophy of sloyd, which embodies the underlying principles of all educational manual training, in any such time. It has been determined, therefore, that three terms of three months each, making a total of one full school year, will be adequate time for students of the maturity and preparation indicated above to thoroughly fit themselves as sloyd teachers.

No student will be awarded a sloyd teachers' diploma unless the entire course has been finished.

METHOD OF INSTRUCTION.

The instruction will involve both individual and class methods. The general use of tools, working positions, sharpening of tools, etc., are all illustrated by class instruction. This is also the case in the mechanical drawing which precedes the making of each model. All general principles are illustrated on the blackboard as in any other subject. Individual instruction is predominant, however, and each student receives individual observance, guidance, and instruction. The director does not touch the work, which is to be prepared and finished entirely by the student teacher.

AIM AND PURPOSE OF THE TEACHERS' TRAINING CLASSES.

The end held in constant view by this department will be that of advancing the cause of Sloyd in particular and of educational manual training in general in all the schools of the Pacific Coast. It is our purpose to establish here a Sloyd training center from which only true and accomplished Sloyd teachers will go out to the schools. It is hoped also to help the coming of the day when only pedagogically educated teachers shall teach manual training in the schools.

THE STUDENTS' CLASS.

The students' classes—distinguished from the childrens' classes by the advanced work and the age of pupils—are formed for young boys and girls who take up this branch of study with a view to obtain that broad and important culture which comes from the education of the eye and hand in connection with the training of the mind.

Admission to these classes may be gained by boys and girls of 14 years of age. The course for these classes consists of the making of 24 Sloyd models, the making of 15 wood-turning models, mechanical and free-hand drawing.

The aim and end of the instruction in these classes is not chiefly to prepare for any other specific department of the institution, but to cooperate to the mutual and general end the harmonious development of mind and body.

The drawing in these classes is a complete course in industrial drawing per se, inasmuch as special importance will be given it, and that it involves, in addition to free-hand drawing, such intellectual problems as will make it not merely an eye and hand training, but, ideally, a mind education.

Length of the course.—The students will receive one lesson a day of an hour and a half, and the course will extend through the entire school year. The wood turning will begin at some suitable time in the second term of the year. Carving as well as wood turning are introduced for the sake of broadening and cultivating the æsthetic

deas of the students, and also because this refreshing extension of the work has been found to gain for the students a large fund of distinct ideas from which they otherwise would be cut off.

CHILDREN'S CLASSES.

These classes are by far the most important functions of the sloyd department. This department is in full sympathy with the progress of the times and of education. It has in mind especially the children of this generation. To this end and object the Sloyd, as taught at Throop Institute, has broken many traditions, which have been obstacles in the progressive movement of Sloyd for younger pupils. We should give the children (boys and girls) tools, as we would give them books. The books open avenues to literature and sciences. The Sloyd opens avenues to all fields of life. There is one additional important advantage that the Sloyd has over the books, however, and that is, it effects physical development as well as mental development. (We can not conceive of these two asseparate. There is an absolute interdependence.)

The children's course.—This course begins with elementary work. The first year's course is characterized by the geometric motives in the outlines of the objects. It proceeds from the simple straight, oblique, and round forms, and advances step by step to higher and more complicated forms. No abstract, meaningless exercises are performed, but each exercise results in some finished article, as labels, key tags, table mats, vase stands, cutting boards, keyboards, triangles, pencil sharpeners, shelves, brackets, picture frames, etc. These are methodically arranged in a progressive order, which is followed so that each child receives a successive training of the thinking powers in connection with the training of the physical powers.

DRAWING.

The drawing—free-hand and constructive—is a conspicuous part of the work in these classes and precedes the woodwork. This course, including both woodwork and drawing, leads up to and through the advanced course taken up by the students' classes.

In this connection it may be profitable to present an analysis of the exercises embodied in the models, and also an analysis showing the interwoven application and recurrence of some exercises. The analysis graphically illustrates the well regulated repetition of the exercises, and that this repetition is performed under varied circumstances and on advanced work.

Each model represents a certain number of exercises. The models thus are the expressions of said set of exercises, and from the analysis is found that each model, with its set of exercises, is but a sequence of the preceding ones. It further shows the fact that every model exists only for the purpose of introducing new cognitions, new tools, new exercises in drawing and woodwork, in an organic, progressive growth, keeping pace with the growth of mind and body of the student.

Below is given a schematic illustration of the arrangement of the models and exercises in the wood turning course, combined with the Sloyd course.

Analysis of models in the wood turning series, Throop Polytechnic Institute.

No.	Name.	Exercises.
1	Axle	Making step cylinder.
2	Gimlet handle	Tapering; making beads.
3	Gavel	Convex ends; concave curves; hand boring; fitting handle.
4	Tool handle	Boring in the lathe; fitting ferrule.
5	Dumb bells	Spherical end turning.
6	Mallet	Reversed curves.
7	Seal handle	Beads; fillets; semicircular end.
8	Napkin ring	Chucking; excavating cylinder.
9	Toilet box	Excavating; fitting lid.
10	Darner	Reversed curve under projecting point.
11	Candlestick	Chuck turning; surface work; fitting.
12	Faucet	Squaring; boring.

GENERAL INFORMATION.

Boys and girls, from 9 years and upward, are admitted to these classes.

Class A—9 to 10.25 a. m., children 9 to 12 years old.

Class B—10.30 to 12 a. m., children 12 to 14 years old.

Class C—1 to 2.30 p. m., students 14 years old.

Class D—2.30 to 3.55 p. m., teachers' training.

Each class receives a lesson a day of an hour and a half, and pursues the work through the entire school year.

The following materials are needed by every participant in all classes of the Sloyd department: A drawing board 18 by 24 by $\frac{1}{2}$; a T square; a triangle; a set of drawing instruments; six thumb tacks; some drawing paper; pencils and erasers. (The cost of these materials need not exceed \$2.)

Analysis showing the inner connection and methodical progression of the exercises which make up the models in the Sloyd course arranged at Throop Polytechnic Institute, Pasadena, Cal.

No.	Names.	Numbers indicating the exercises shown in the synopsis.
1	Preparatory.....	1, 2.
2	Label.....	1, 2, 3, 4, 5, 6.
3	Keytag.....	1, 2, 3, 4, 7, 8.
4	Table mat.....	1, 2, 9, 10, 11, 7, 12.
5	Quarter foil.....	1, 2, 3, 4, 5, 9, 8, 13, 7, 12.
6	Triangle.....	1, 2, 3, 4, 14, 7, 12.
7	Pencil sharpener.....	1, 2, 3, 4, 9, 8, 15, 6, 7, 12, 16.
8	Cutting board.....	1, 2, 9, 10, 17, 11, 12.
9	Pentagonal mat.....	1, 2, 5, 14, 18, 11, 12.
10	Keyboard.....	1, 2, 3, 4, 9, 19, 15, 12, 20, 21, 12.
11	Bracket.....	1, 2, 3, 4, 9, 8, 22, 7, 3, 4, 8, 3, 4, 8, 15, 12, 16, 23.
12	Picture frame*.....	1, 2, 3, 4, 9, 10, 8, 15, 7, 24, 25, 26, 1, 2, 3, 4, 9, 15, 16, 23, 12.
13	Flower stick.....	1, 2, 37, 28, 29.
14	Penholder.....	1, 2, 29, 30, 31, 12.
15	Flower-pot stand.....	1, 2, 27, 32, 23, 33, 1, 27, 13, 23, 34, 12.
16	Flower cross.....	1, 2, 27, 2, 4, 33, 2, 29, 19, 13, 8, 35, 36, 12.
17	Corner bracket.....	1, 2, 3, 4, 9, 10, 17, 11, 7, 37, 1, 2, 27, 4, 8, 38, 31, 12.
18	Hammer handle.....	1, 2, 27, 28, 33, 6, 89, 6, 39, 4, 40, 12.
19	Box.....	1, 2, 27, 4, 12, 40, 16, 23, 1, 2, 27, 4, 12, 23, 34, 27, 12.
20	Hatchet handle.....	1, 2, 27, 28, 33, 27, 4, 9, 10, 5, 8, 41, 11, 40, 12, 42.
21	Picture frame†.....	1, 2, 27, 28, 33, 4, 43, 36, 44, 1, 2, 27, 28, 4, 27, 11, 12, 23, 12.
22	Key rack.....	1, 2, 27, 32, 28, 4, 45, 46, 20, 21, 12.
23	Paper knife.....	1, 2, 27, 28, 27, 4, 5, 47, 29, 8, 15, 11, 45, 46, 48, 12.
24	Ruler.....	1, 2, 27, 28, 33, 27, 4, 49, 46, 7, 12.
25	Mitered frame.....	1, 2, 27, 28, 33, 27, 50, 51, 16, 23, 34, 27, 12, 1, 2, 27, 28, 4, 11, 12, 23.
26	Pen tray.....	1, 2, 27, 28, 33, 27, 4, 45, 46, 52, 53, 12.
27	Towel roller.....	1, 2, 32, 27, 28, 33, 19, 15, 45, 46, 27, 4, 8, 5, 6, 31, 36, 28, 54, 55, 56, 57, 38, 40, 8, 12.
28	Hat rack.....	1, 2, 27, 28, 33, 27, 32, 49, 4, 58, 11, 33, 31, 12, 1, 2, 27, 28, 33, 4, 35, 19, 8, 60, 59, 16, 61, 12.
29	Cake spoon.....	1, 2, 27, 28, 33, 27, 9, 39, 9, 41, 17, 11, 15, 62, 7, 24, 15, 52, 53, 40, 12.
30	Frame.....	1, 2, 27, 28, 33, 27, 63, 64, 2, 1, 36, 2, 65, 36, 1, 2, 66, 1, 5, 36, 67, 60, 27, 12.
31	Lamp bracket‡.....	1, 2, 27, 32, 28, 27, 9, 22, 9, 8, 7, 45, 46, 1, 2, 27, 28, 4, 68, 12, 16, 69, 23, 27, 12.
32	Shelf.....	1, 2, 27, 32, 4, 28, 70, 5, 36, 9, 10, 8, 15, 71, 46, 16, 72, 40, 8, 38, 12, 1, 2, 27, 28, 33, 40, 8, 38, 12.
33	Scoop.....	1, 2, 27, 28, 4, 9, 10, 73, 53, 12, 5, 6, 62, 17, 8, 15, 48, 12.
34	Book rack.....	1, 2, 27, 28, 32, 27, 4, 1, 2, 27, 28, 32, 27, 4, 9, 74, 8, 15, 75, 12, 77, 76, 48, 45.
35	Knife box.....	1, 2, 27, 28, 32, 33, 27, 4, 83, 78, 79, 7, 24, 15, 8, 9, 10, 17, 11, 12, 16, 1, 2, 27, 33, 27, 49, 11, 12, 23, 34.
36	Tray.....	1, 2, 27, 28, 33, 27, 4, 49, 1, 2, 27, 28, 33, 27, 4, 9, 10, 17, 11, 7, 24, 8, 15, 30, 12, 80, 81, 57, 38, 12, 77.
37	Hanging cabinet A.....	82, 83, 84, 85, 86, 87, 89, 90.
38)		
39)	Tool chest B.....	Completed prices involving all the foregoing exercises.
40)		

* First year's course.

† Second year's course.

‡ Third year's course.

§ Fourth year's course.

|| Sloyd exercise—A manipulation with a tool, involving mental and physical efforts.

The figures indicate the exercises involved in making each model, and are explained in the key below. For example: 1 means rip sawing; 2, crosscut sawing; 4, cross planing; 7, boring, etc.

KEY TO NUMBERS USED IN ANALYSIS.

- | | | |
|---------------------------|---------------------------------|-------------------------------------|
| 1. Rip sawing. | 7. Boring (horizontal). | 13. Filing right angles (exterior). |
| 2. Crosscut sawing. | 8. Curve filing (convex curve). | 14. Block planing (free-hand). |
| 3. Length planing (edge). | 9. Curve sawing. | 15. Curve filing (concave curve). |
| 4. Cross planing (end). | 10. Spoke shaving. | 16. Gluing. |
| 5. Oblique sawing. | 11. Modeling with flat file. | 17. Modeling with spokeshave. |
| 6. Oblique planing. | 12. Sandpapering. | |

18. Beveling with block plane.
19. Straight edge filing.
20. Fixing metal fittings.
21. Metal filing.
22. Filing symmetrical curves.
23. Nailing.
24. Compass sawing.
25. Filing right angles (interior).
26. Beveling with flat file.
27. Length planing (surface planing).
28. Squaring.
29. Whittling (point whittling).
30. Modeling with knife.
31. Boring (perpendicular).
32. "To joint" a surface (wind-ing sticks).
33. Gauging.
34. Nail sinking.
35. Halved together joint.
36. Chiseling.
37. Countersinking.
38. Screwing.
39. Modeling with spokeshave (symmetric).
40. Scraping. 40¢. "Flush joint."
41. Modeling with spokeshave (nonsymmetric).
42. End filing.
43. Halved lapping.
44. Grooving with chisel.
45. Veining.
46. Carving.
47. Oblique surface planing.
48. Punching.
49. Beveling with jack plane.
50. Rabbit planing.
51. Mitering.
52. Grooving with gouge.
53. Scraping with round scraper.
54. Planing octagonal prism.
55. Planing round prism.
56. Fitting axle.
57. Clamping.
58. Chamfering with chisel.
59. Chamfering with knife.
60. Fitting dowels.
61. Wedging.
62. Cutting with drawing knife.
63. Mortise gauging.
64. Halved corner joint.
65. Open mortise and tenon joint.
66. Half blind haunched mortise and tenon.
67. Double mortise and tenon with miter.
68. Dovetailing.
69. Mitering (miter box).
70. Slotting (router planing).
71. Dovetailing.
72. Straight edge beveling.
73. Gouging (scooping).
74. Contouring.
75. Carving (bas-relief).
76. Fitting hinges.
77. Shellacking.
78. Butt joining (housed joint).
79. Butt joining (end joint).
80. Dovetail with miter.
81. Geometric carving.
82. Paneling.
83. Half blind dovetailing.
84. Fitting lock.
85. Making moldings.
86. Plow planing.
87. Mortise and tenon (stile and rail).
88. Inlaying.
89. Doweling.
90. Gluing joints.

TUITION FEES.

The Institute has but one tuition rate, without reference to the work pursued. Thirty dollars per term, or \$80 per year if paid annually in advance, entitles a student to admission to any and all lines of work within the scope of his ability. Every student makes a deposit of \$5 to cover loss, breakage, material used, etc. Any unearned part of this deposit is returned to the student at the end of the year.

Correspondence regarding information from this department is cordially solicited, not only concerning financial and other arrangements of the Sloyd courses, but also, and rather, concerning the theoretical and practical significance of it. Teachers, parents, and in fact any who desire to give or receive points of information of the subjects of manual training and Sloyd are requested to correspond with

CHAS. A. KUNOU, *Director*.

VI.

THE CALIFORNIA SCHOOL OF MECHANICAL ARTS, SAN FRANCISCO, CALIFORNIA.

This Educational Institution on the Pacific Coast, like the several schools in the eastern part of the country recorded in this Report, is the outcome of the public spirit of a single worthy citizen.

I am indebted to the courtesy of Principal George A. Merrill, B. S., for the several circulars of the school from which the following statements are taken; and, also, for a letter under date of May 25, 1896, from which I venture to quote. From the first "Circular of Information" (January 1, 1895) a few lines, descriptive of the building, as well as the passages relating to the proposed courses of instruction, are taken. The main account is, however, from the handsome pamphlet of 33 pages entitled "Circular No. 3."

In speaking of the Circulars Principal Merrill says:

"The Circular of January 1, 1895, was issued before the school was opened, and was necessarily incomplete in several respects. Among other things of interest the new Circular"—(that of July 1, 1896) "will contain an itemized list of the cost of various equipments in each department. This list we have taken directly from our vouchers and is more complete than any list I have ever seen in publication. * * * If you have read our circular of Jan. 1, 1895, you understand our plan of instruction, combining the Manual Training and Trade School ideas in a single curriculum, as set forth on page 16. There is no other institution in existence in which these two ideas are so intimately associated, and to that extent our school is unique."

"Have you received any information concerning the Wilmerding School of Industry, for which an endowment of \$400,000 has become available, and which will be opened here within a year? For fear you have not, I take the liberty of sending herewith a printed copy of Mr. Wilmerding's Will, taken from the last report of the Secretary of the Board of Regents of the University of California."

The following is the paragraph from the copy of the will which relates to the school; in which, the intent of the founder to create an industrial trade school, is clearly stated:

Sixth—I give, devise, and bequeath to the Regents of the University of California the sum of four hundred thousand (\$400,000) dollars, upon the following trusts and conditions, to wit:

To establish and maintain a school, to be called "The Wilmerding School of Industrial Arts," to teach boys trades, fitting them to make a living with their hands, with little study and plenty of work.

Said Regents are empowered to purchase lands and erect thereon suitable workshops and places of instruction, and to equip the same with such machinery, tools, and implements as in their judgment may be necessary and proper; but I suggest to them that the expenditure for the purchase of said lands, and the construction and equipment of said workshops and places of instruction, be kept within such bounds as that the portion of said four hundred thousand (\$400,000) dollars thereafter remaining shall be able to produce an income sufficient to forever maintain and support said school. Said Regents are authorized to invest the portion of said fund which shall remain after the purchase of said land and the erection and equipment of said workshops and places of instruction, in bonds, mortgages, or other interest-bearing securities, but no portion of said fund or of the income which may be derived therefrom shall be used for or diverted to any purpose other than for the support and maintenance of said school.

The few lines descriptive of the general appearance and cost of the buildings are from pages 8 & 9 of the circular of Jan. 1, 1895, as follows:

The architecture is Spanish in general style; the buildings are broad and strong, substantially built of brick and covered with slate. Standing by themselves, they are amply provided with light and air. Without unnecessary ornament, the buildings are simple, chaste, and dignified, impressing you with the sense of strength, repose, and adaptation to the use for which they are intended. They will accommodate about 350 pupils when the school is full, and have cost less than \$45,000. When the entire plant is finished it will represent approximately \$115,000, as follows: Lot, with grading, \$40,000; building, \$45,000; machinery, furniture, and fittings, \$30,000—in all, \$115,000. There will remain of the endowment \$425,000, as a permanent fund for the support of the school and its field of work will be limited by the income of this sum until some generous sympathizer shall give us further means.

The proposed plan of the "Courses of Industrial Art" are from pages 15-17 of the "Circular of 1895" and are here quoted as showing the educational ideas and plans of the directors of the new school which will be found more fully developed and formalized in the latest circular, hereafter quoted.

COURSES OF INSTRUCTION.

In formulating the courses of instruction—their general character, the details of each, the methods of presentation, and the general plan of instruction—the first thought has been to comply with the broad and generous terms of the founder's bequest, as set forth in the fourteenth paragraph of the deed of trust, and as printed on page 7 of this circular. At the time when the deed was executed, September 21, 1875, the manual training idea had not been developed in this country, and it is not probable that James Lick contemplated an institution the object and purpose of which should be restricted to giving young men and women simply the general culture and development that the ordinary course of manual training is understood to impart, and to which its aim is rigidly limited, according to the general acceptance of the term "manual training." It is equally certain, however, that Mr. Lick had in mind a school, and not merely a number of workshops; he provided for an institution to promote "intelligent mechanical skill," and not a place to perpetuate the routine and drudgery of shop life.

In order to carry out the provisions of the endowment, as thus interpreted, a careful survey has been made of the entire field of industrial education, with a view to selecting such features as could best be adapted to our especial needs and incorporated in a scheme of instruction that will accomplish the following specific ends:

First. To give each student a thorough knowledge of the technique of some one industrial pursuit, from which he may earn a living.

Second. At the same time, to see that his acquaintance with tools and materials, and with science and art, is broad enough to allow the fullest development in his special field and to permit of his ready adjustment to the new and varying conditions that are constantly taking place in all the mechanical and industrial arts.

Third. To develop in him a degree of intelligence that will fit him for the duties of active citizenship.

Analysis of the ordinary manual training and trades school courses shows that they bear to each other a conjugate or reciprocal relation, and this relationship has been taken advantage of to combine both ideas in a single course, in the manner hereinafter outlined.

Manual training schools throughout the United States confine themselves to a course that is usually of only three years' duration, and is valued for the general and symmetrical education it affords, rather than for the specific information it imparts, while the question as to what particular pursuit the student is going to follow for a living receives little or no consideration, this important and critical matter being left to the student's own discretion after graduation. It is our plan to begin with a manual training course, and when the student has nearly completed it to allow him to select one of fourteen mechanical and industrial arts that are designated in the curriculum as technical courses, in order that he may devote to his chosen field of work his entire time for a year and a half, making the course four years in all. When the pupils enter the school our first care will be to cultivate in them power and judgment, good tastes and correct habits of thought and action. This will be done as far as possible through the agency of things that will be of

service to them in the later parts of their course or in after life. Little by little this educational process gives way to the consideration that our social conditions require, that every member of the community, if he is to be successful, must know thoroughly some one thing, and the ultimate object of our course is to afford each student an opportunity to acquaint himself with all that pertains to one of several of the most important industrial pursuits. In other words, we begin from the educational or esthetic side, and end with the practical or labor side.

A little reflection will show that the adaptation of the ordinary manual training course to these purposes necessitates some important modifications of it. Sooner or later the student must learn to execute his work in the shortest possible time, and this implies a gradual development of skill that is not usually contemplated as a feature of manual training. This acquirement of skill we shall try to bring about gradually, but, in the end, the success of each student will be measured by his ability to do his work in such a manner that the product of his labor, if placed in the open market, would stand the test of competition.

The manual training part of our curriculum is different for boys and girls, but otherwise is the same for all students, and will be required of all; but after two and a half years, when the separation into technical courses takes place, each student's work must be original as far as possible, and his instruction will be adapted strictly to his individual needs. Though for two and a half years pupils are to be assembled in classes for instruction, still the method of individual original work will be used from the first as much as possible, and the extent of its use will be steadily increased in such a manner that there will be no sudden change of methods from the manual training to the technical parts of the course.

The following extracts from Circular No. 3 sufficiently explain themselves and show the present status of this interesting school:

THE CALIFORNIA SCHOOL OF MECHANICAL ARTS.

HISTORICAL.

The California School of Mechanical Arts is the outcome of the public spirit of James Lick, a citizen of California. Having been brought up in narrow circumstances, earning his living in early manhood as a mechanic, he sympathized with the struggles of the young for a place in life, and resolved to found a school where those who were dependent upon themselves could receive such an education as would give them a foothold in the world.

On September 21, 1875, Mr. Lick executed a deed of trust by which he conveyed to certain trustees a large amount of property for various purposes of public benefit, of which this school was one. Its endowment is provided for in the deed of trust in the following terms:

"*Fourteenth.* And in further trust, to found and endow, at a cost of five hundred and forty thousand dollars (\$540,000), an institution to be called "The California School of Mechanical Arts," the object and purpose of which shall be to educate males and females in the practical arts of life, such as working in wood, iron, and stone, or any of the metals, and in whatever industry intelligent mechanical skill now is or can hereafter be applied; such institution to be open to all youths born in California. The institution shall be founded and endowed under the direction of said Dr. J. D. B. Stillman, Horace Davis, A. S. Hallidie, John Oscar Eldridge, John O. Earle, and Hon. Lorenzo Sawyer, and the survivors of them, who are required to acquire the site thereof, and to form a corporation, the only corporators being themselves, to own, control, and manage the said institution, the members of said corporation never to exceed seven, and vacancies in the membership to be filled from time to time by the survivors."

The execution of this particular portion of the trust was delayed by prolonged litigation, and it was not until January 3, 1895, that the buildings were completed and the school formally established.

On Monday, January 14, 1895, instruction was commenced with an enrollment of 106 boys and 30 girls in the junior (first-year) classes. Middle (second-year) classes were not inaugurated until the opening of the second school year July 22, 1895, at which time a new first-year class of 75 boys and 50 girls was admitted by competitive examination. In the same manner the programs of the third-year and fourth-year work will begin as the pioneer class progresses to those stages. Although all departments of the school are now organized and equipped, and will be in operation at the beginning of the third school year, July 27, 1896, the full enrollment of four grades of students will not be accomplished until the year following.

LOCATION.

The school occupies the entire block bounded by Fifteenth, Sixteenth, Utah, and Nebraska streets. It is distant exactly one mile from the city hall, and is easily reached from several lines of street cars. * * *

BUILDINGS.

There are two main buildings—the Academic Building and the Shops. Both are of stock brick, with trimmings of artificial stone.

The Academic Building is of three stories. It fronts 123 feet on Utah street, and its greatest depth is 71 feet. In the basement all the walls and partitions are made of artificial stone, cast in situ, and the floors are entirely of concrete. The chemical laboratory and the room for cookery are made fireproof. Every room of the building is provided with means of lighting by both gas and electricity. The plumbing is all exposed and thoroughly sanitary. The ventilation is accomplished through the agency of the hollow brick walls, supplemented by a number of large air shafts leading to the attic, and by registers placed beneath the windows to supply fresh air. Heat is provided by direct radiation from steam pipes placed around the window sides of each room, fed from the engine exhaust and from the boiler in the shops.

The Shop Building is made up of a two-story portion, 107 by 40 feet, a one-story portion, 50 by 60 feet, and an additional cupola shed—a structure 10 by 13 feet—built entirely of iron. This building also is heated by steam.

A third building, 16.5 by 31 feet, surrounds the brass furnaces, core oven, and terra-cotta kiln. This structure is of corrugated galvanized iron on wooden frame.

CONDITIONS OF ADMISSION.

The school is open to any boy or girl of this State qualified to enter, and is free of charge for tuition. The requirements necessary for entrance are substantially the same as are needed to enter the last of the grammar grades of the public schools. These requirements, however, are not rigidly insisted upon, but regard is had to the general intelligence and good intentions of the applicant.

The number admitted to the next class, beginning Wednesday, July 29, 1896, will be limited to 75 boys and 50 girls.

Applicants will be admitted upon satisfactory recommendation from their former teachers, principals, or school superintendent.

Candidates from San Francisco and vicinity, if not admitted upon recommendation, must pass a written examination, the purpose of which will be to determine the applicant's ability to express himself clearly and correctly by means of simple English sentences, and to test his knowledge of the processes of arithmetic,* and his acquaintance with the leading facts of United States history and descriptive geography.

The qualifications of candidates residing at places remote from San Francisco will be determined by correspondence, as far as possible.

EXPENSES.

There is no charge for tuition, but students are required to furnish their own books, drawing instruments, overalls, aprons, and edge tools, and to pay the actual cost of working materials. The total expense averages about twenty dollars a year.

Working materials, such as lumber, iron, clay, chemicals, sewing materials, drawing materials, etc., are purchased in quantities for each department, and at the opening of each term payments are required in advance for the estimated cost of materials for the ensuing half-year. For the year 1896-97 this charge has been fixed at five dollars a term. No part of this amount will be refunded to pupils who leave the school before the end of a term for which payment has been made. This forfeiture applies also to those dismissed for cause.

Drawing instruments can be purchased from the school at cost, if desired. It is important that these instruments should be of good quality and well selected. The sets handled by the school are sold at prices from five to ten dollars. These are to be purchased at the beginning of the first year, and they last throughout the course.

A set of chisels and plane blades for carpentry and pattern making can be purchased from the school, if desired, at a cost of two dollars and fifty cents. They are required of all boys at the beginning of the first year.

*Including the decimal notation, fractions, and square root, but omitting partial payments, bank discount, and all other technical parts of commercial arithmetic.

A set of carving tools is required during the second year. These may be purchased from the school at a cost of three dollars per set of ten tools.

Each boy entering the machine shop must provide himself with the following tools: 5-inch try-square, 8-inch outside calipers, 4-inch outside calipers, 6-inch outside calipers, 6-inch dividers, 12-inch steel straight-edge, 4-pound hammer. These are sold by the school for five dollars per set.

For two members of the same family one set of any of the above-mentioned tools will be sufficient.

All other tools and appliances are furnished by the school, and loss or breakage, resulting from carelessness, is charged to the pupil responsible for such damage. * * *

The work of keeping in order the buildings, grounds, apparatus, tools, and machinery affords opportunities for students to earn a small amount by working before and after school hours and during vacations. To those who can not afford to purchase all the books, instruments, and tools required, the school will undertake to loan a reasonable portion of the things needed. Applications for loans must be made in writing. Printed blanks for this purpose may be obtained at the principal's office.

Students whose parents do not reside in the near vicinity of San Francisco can find good board and lodging at prices ranging from eighteen to thirty dollars per month. Every effort will be made by the school to assist pupils to secure proper accommodations in quiet and respectable homes.

CALENDAR.

The third school year will begin Monday, July 27, 1896. All second-year and third-year pupils must be present on the opening day; places will not be reserved for absentees. Candidates for admission must appear Wednesday, July 29, at 9 o'clock. Instruction for first-year classes will begin Monday, August 3.

DAILY PROGRAM.

Hours of attendance are from 9 a. m. to 3.30 p. m. during the first two years of the course, and from 9 a. m. to 4.30 p. m. during the remaining two years. The time, from 9 a. m. to 3.30 p. m. is divided into seven periods of about fifty minutes each. For each period the program provides work of some kind, for rest and study appropriate intervals are taken from each period as often as may be advisable.

The amount of prescribed home work is reduced to a minimum, but the students are required to devote much of their time out of school to original investigation and inquiry, and to reflecting upon and anticipating their school affairs. Such home work as is given must be done thoroughly and regularly. At least one and one-half hours per day should be devoted to actual study at home, free from disturbing influences.

REGULATIONS.

It is important that students should be prompt and regular in attendance, and that their hours for amusement and diversion should not be allowed to interfere with their school work.

The plan of instruction gives the pupils exceptional freedom and privileges, and none will be retained who fail to show proper appreciation of these conditions.

Due care and protection must be extended to all school property.

GRADUATION.

The school diploma will be awarded to each student who completes, with creditable standing, any one of the Trades or Technical Courses offered.

The principal and teachers are prepared always to furnish written statements certifying good standing in scholarship and deportment in all cases where the student's record shows that he is worthy of such recommendation.

Graduates should be able to go directly into such occupations as their courses may lead to, and to earn good wages from the beginning. With the thorough knowledge of science and art, and the close acquaintance with all kinds of tool work afforded by the school course, its graduates should find no difficulty in working rapidly into prominence, and in commanding full and liberal remuneration in their respective lines.

The school will not guarantee positions, but it will endeavor to find suitable places for its graduates, and to follow each in his or her career.

PLAN OF INSTRUCTION.

A complete course covers a period of four years, of which the first half is devoted to a Preliminary Course, and the last two years to a formal Apprenticeship in some department.

The prime object of the school is to teach trades. It aims to give each student a thorough knowledge of the technique of some one industrial pursuit, from which he may earn his living. It offers, however, something more than the mere equivalent of a workshop apprenticeship.

1. Before commencing work exclusively at his trade, each student must first complete a graded course of woodwork and ironwork, involving the elements of carpentry, pattern making, forging, molding, and iron fitting, and covering the first two years of attendance.

2. A systematic course of instruction in English, mathematics, science, and drawing precedes and parallels the purely apprenticeship instruction of the last two years.

By means of these lines of preliminary instruction the student's acquaintance with tools and materials, and with science and art, is made broad enough to allow the fullest expansion in any trade that he may select, and to permit of his ready adjustment to the new and varying conditions that are constantly taking place in all the mechanical and industrial arts.

3. There is the additional advantage that the shop instruction throughout is based upon work that is selected, as far as possible, for the benefit of the student, and not for the profit of his employer. This does not imply that his time of labor is frittered away, or that he is not made to realize the conditions he will have to face in after life. On the contrary, a large proportion of his time is devoted to the manufacture of marketable goods, and his success in the school is measured by his ultimate ability to execute his work in such a manner and at such a rate that the product of his labor, if placed upon the market, will stand the test of competition.

The school has facilities for teaching the following trades and technical courses: (1) Carpentry; (2) pattern making; (3) forging; (4) molding; (5) machine-shop practice; (6) machine drawing; (7) architectural drawing; (8) technical design; (9) modeling; (10) wood carving; (11) cookery; (12) dressmaking; (13) millinery; (14) preparatory for technical college course.

PRELIMINARY COURSE.

The two-years preliminary course serves as a foundation for the different trades and technical courses. This part of the curriculum is essentially the same as the course given in the so-called Manual Training Schools. It is different for boys and girls as regards tool work and domestic branches, but otherwise it is the same for all students, and is required of all. It divides its time equally between academic and industrial branches.

The Academic Branches include English, Mathematics, Science, and History. One period of fifty minutes per day, for two years, is devoted to each of these subjects, with the exception of History, which is given on alternate days.

The instruction in English includes word study, grammar, and rhetoric, practice in written and oral expression, and a study of literature through English classics.

The mathematical instruction includes elementary algebra, and plane, solid, and spherical geometry, carried on side by side throughout both years.

The science work consists of physics during the first year and chemistry during the second year.

The preliminary instruction includes also a general course of ancient, mediæval, and modern history.

The Industrial Branches are made up of the three elements: Tool work, Industrial Art, and Household Art and Science.

The Industrial Art instruction begins the same for boys and girls. Free-hand representative and decorative drawing, mechanical drawing, modeling, and carving, are substantially the same for both up to the middle of the second year, from which point of divergence the boys continue along the mechanical and architectural lines, while the girls do more of the free-hand work, such as designing.

The Tool work (for boys only) consists of a graded course of carpentry, molding, and pattern making during the first year; forging, molding, and iron fitting during the second year; and during the first term of the third year machine-shop practice.

The work in Household Art and Science begins in the first year with a course of plain sewing and the preliminary parts of cutting and fitting. Drafting and dress-making proper are completed during the first term of the second year. The rest of

the second year is used for millinery. The third year work of this department comprises cooking and a comprehensive course in the direct application of science and art in the household, including interior decorations and furnishings, heating, lighting, ventilating, and other sanitary conditions, and hygiene.

TRADES AND TECHNICAL COURSES.

At the beginning of the third year, each student must elect one of the courses enumerated on page 15, and must serve in it an apprenticeship of two years.

All apprentices are required to meet one hour per week, either in a body or in sections, for the purpose of discussing papers and reports to be submitted by individual members, somewhat after the seminary plan. The subjects of these reports are selected or assigned by the pupils themselves, as far as possible, and relate to manufacturing processes and devices, to topics from the history of art and industry, and to scientific subjects. Each report must be exhaustive, and will be placed before the class as clearly as possible by means of printed abstracts and the stereopticon, the presentation to be followed by a thorough discussion.

All apprentices are given a brief course in political economy, commercial geography, physical geography, and United States history and government.

Several pages giving detailed courses of instruction in the fourteen trades and employments taught, follow:—then the catalogue of students, and then the interesting details of the cost of equipment of the several departments; which, as it may be found serviceable as a guide for other schools, is given here in full.

Inventory and cost of equipments for each department.

ENGLISH.

Desks for pupils.....	\$304.82	
Teacher's desk and chair.....	20.70	
Books and portraits.....	111.35	
		\$436.87

HISTORY.

Desks for pupils.....	320.60	
Teacher's desk and chair.....	20.70	
Maps and books.....	31.75	
		373.05

MATHEMATICS.

Desks for pupils.....	304.82	
Teacher's desk and chair.....	20.70	
Books.....	8.75	
		334.27

PHYSICS.

Six tables.....	21.00	
Three doz. stools.....	30.00	
Two storage cabinets.....	88.00	
Apparatus, tools, etc.....	1,026.34	
Woodwork in dark room and storeroom.....	38.20	
Desks for pupils in lecture room.....	304.82	
Shades for darkening.....	16.00	
Teacher's desk and chair.....	20.70	
		1,545.06

CHEMISTRY.

Lumber for woodwork—desks, cases, etc.....	158.94	
Labor on woodwork.....	218.60	
Hardware—locks, etc.....	92.48	
Plumbing.....	284.12	
Painting.....	60.00	
Glassware and apparatus.....	466.42	
Condensing apparatus.....	39.00	
Three doz. stools.....	24.00	
Sundries.....	8.62	
		1,847.18

FREE-HAND DRAWING.

(a) Light and shade—

Storage case for drawing boards, cabinet, and three screens	\$161.00	
Three doz. Worcester stands	323.00	
One hundred and fifty drawing boards	45.00	
Models, casts, and photos	261.97	
Three doz. chairs	36.00	
Teacher's desk and chair	20.70	
Sundries	7.66	
		<hr/>
		\$855.33

(b) Color room—

Three doz. stands	466.60	
Three doz. chairs	36.00	
One hundred drawing boards	37.00	
		<hr/>
		539.60
		<hr/>
		\$1,394.93

MECHANICAL DRAWING.

Fifteen double stands	383.41	
Three hundred and fifty drawing boards	145.54	
Cabinets, sliding blackboard, etc	113.32	
Tools and instruments	55.48	
Teacher's desk and chair	20.70	
Sundries	6.31	
		<hr/>
		724.76

MODELING.

Apron case, two pan racks, bins, etc	197.06	
Three doz. Worcester stands	352.43	
Fifteen doz. galvanized pans	51.07	
Casts, photos, etc	175.12	
Terra-cotta kiln	221.76	
Tools	7.95	
		<hr/>
		1,005.39

WOOD CARVING.

Ten quadruple benches, with vises	313.08	
Clamps, mallets, brushes	22.48	
Grindstone and stand	36.00	
Storage cabinet	29.00	
		<hr/>
		400.51

SEWING.

Six tables	28.50	
Three storage cabinets	104.00	
Five sewing machines	186.60	
Curtains and rods	29.50	
Mirror	50.00	
Sofa	13.00	
Five doz. baskets	30.00	
Ten sets drafting systems, and forms	118.92	
Three doz. chairs	36.00	
Teacher's desk and chair	20.70	
Sundries	2.65	
		<hr/>
		619.87

COOKERY.*

Sundries	5.25
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ENGINE AND BOILER.

4 by 16 feet tubular boiler and stack, including setting	964.25	
35-horsepower Armington & Sims engine, with bed and fittings	2,157.28	
Stratton separator and Goubert heater	203.90	
Tools for engine room and boiler room	94.28	
Sundries, including woodwork	75.22	
		<hr/>
		3,474.93

* Estimated cost of completing, \$500.

CARPENTRY AND PATTERN MAKING.

Benches	\$395.25	
Thirty quick-acting vises	121.38	
Thirty sets bench tools	485.37	
Turning and pattern-making tools	167.18	
Sundry small tools	64.51	
Two grindstones and stands	70.56	
15-inch double-arbor Fay circular saw	255.00	
Witherby, Rugg & Richardson 20-inch pattern lathe	127.00	
36-inch Berry & Orton band saw	139.00	
24-inch Fay planer	214.00	
Glue heater (castings and fittings)	8.40	
Twelve diamond lathes, 13 inches by 5 feet	826.57	
Belting and shafting	326.60	
Office cabinets	59.00	
Sundries	92.86	
		\$3,352.68

FORGING.

300-pound Bement & Miles steam hammer, with fittings	726.65	
Twenty-two anvils	295.50	
Castings and blast gates for twenty students' forges	305.03	
Three large forges	67.00	
Overhead piping for blast and exhaust, including No. 5 Sturtevant blower and No. 55 Sturtevant fan	597.00	
Bituminous floor	159.69	
Grindstone and stand	45.00	
Diamond emery stand, No. 5	65.38	
Prentice drill press, 20-inch	87.00	
Shafting and belting	211.80	
Five vises	28.00	
Twenty benches	134.83	
Sundry tools	271.03	
Lumber and hardware	147.93	
Office fittings	41.00	
Sundry labor	144.55	
Sundries	43.36	
		3,365.75

FOUNDRY.

No. 1 Whiting cupola, erected and lined, with ladles	573.50	
Materials for iron shed around cupola	396.33	
No. 2 Baker blower and engine	508.69	
Stover exhaust tumbler and fittings	125.07	
Platform scales	33.08	
Materials for flasks and bins	234.36	
Materials for concrete floor	89.30	
Twenty sets bench tools	78.44	
Sand	66.83	
Labor	239.25	
Sundry tools	54.98	
Brass furnaces and core oven	401.01	
		2,800.84

MACHINE SHOP.*

Eight Putnam lathes, 14 inches by 5 feet	1,380.00	
One Putnam lathe, 14 inches by 6 feet	182.50	
One Prentice lathe, 14 inches by 6 feet	270.00	
One Muller lathe, 21 inches by 8 feet	422.50	
One Pond planer, 24 inches by 24 inches by 8 feet	450.00	
One Worcester drill grinder, No. 1, C	70.00	
One Aurora drill press, 24 feet	160.00	
Stow center grinder	15.00	
Diamond wet grinder, No. 2	105.00	
Diamond dry grinder, No. 6	72.75	

* Estimated cost of completing \$1,000.

Shafting and belting.....	\$519.69
Benches, lockers, and other woodwork.....	906.06
Lathe chucks.....	167.41
Twenty-three bench vises.....	172.35
Fifty sets Starrett's bench tools.....	258.60
Sundry tools and steel.....	457.30
Sundries.....	7.20
	<hr/> \$5,616.63

UNCLASSIFIED EXPENDITURES.

Office fittings and furniture.....	479.68
Corridors and stairs, matting and rubber.....	323.51
Steam-heating plant.....	1,194.25
Blackboards.....	317.76
Fire hose and five reels.....	223.50
Gas fixtures.....	167.75
Garden and grounds.....	114.85
Janitor's implements and garden tools.....	123.56
Teachers' lunch room.....	23.45
Janitor's room.....	57.65
Mirrors, towels, clocks, etc.....	70.12
Settees.....	95.00
Sundry chairs.....	24.00
Sundry tables.....	20.00
Door mats.....	17.25
Flag.....	9.00
Collection of wood specimens.....	25.00
Sundry painting.....	75.48
Sundry lumber.....	69.04
Sundry finishing hardware.....	70.90
Sundry labor.....	602.20
Sundries, less discounts for cash.....	65.48
	<hr/> 4,169.43
Total expenditures.....	30,987.13
Estimated cost of completing—	
Department of Cooking.....	500.00
Machine Shop.....	1,000.00
	<hr/> 1,500.00
Total cost of equipments.....	32,487.13

Summary of attendance for year 1895-96.

	First year.	Second year.	Total.
Boys.....	86	82	168
Girls.....	50	18	68
Total.....	136	100	236

List of Members of Corporation and Faculty of the California School of Mechanical Arts.

Board of Trustees.—Horace Davis, President; Andrew S. Hallidie, Vice-President; John O. Earl, Rev. Horatio Stebbins, James Spiers.

Officers of instruction.—George A. Merrill, B. S., Principal, theoretical mechanics; Miss Emma Hefty, B. L., English; Miss Sophia A. Hobe, Recorder, history and government; George B. Miller, M. A., mathematics; Miss Caroline W. Baldwin, B. S., D. Sc., physics; William H. Hollis, B. S., chemistry; Miss Eda Menzel, freehand drawing, designing, carving; Oliver S. Goodell, mechanical and architectural drawing; Felix Peano, modeling, designing, and architectural ornament; Miss M. L. Crittenden, sewing and cookery; Edward T. Hewitt, carpentry and pattern making; J. L. Mathis, forging; Matthew Arnold, molding and machine-shop practice; Irving P. Henning, engine.

VII.

THE THOMAS S. CLARKSON MEMORIAL SCHOOL OF TECHNOLOGY, POTSDAM, N. Y.

One of the most recent additions to the Technical Schools of the country is the school to be known by the above title which it is expected will be ready to receive pupils in September, 1896.

The account of the school which, with an illustration of the proposed buildings, appeared in the issue of the New York Tribune of July 15th, 1895, being an authorized statement of the origin and purpose of the school, follows:

A new Technical School—It is a memorial to Thomas S. Clarkson in Potsdam—A handsome endowment and complete equipment—It will cooperate with the State Normal School.

An important addition to the Manual Training schools of the United States is being made here. It is the new Thomas S. Clarkson Memorial School of Technology. The buildings for this new school are now being erected here opposite the large group of buildings of the State Normal and Training School, with which they will form a handsome and notable group.

The Thomas S. Clarkson Memorial School of Technology is the gift of the heirs of Thomas Streatfield Clarkson, who died at his home here last August. Mr. Clarkson possessed a large fortune and was unmarried. Some time before he died he spoke casually to his cousin, T. Streatfield Clarkson, and to his sisters, the Misses Clarkson, of his desire to found a trades school here for the benefit of the poor boys of the country.

Before anything could be done, however, Mr. Clarkson met with an accident in his quarries and died suddenly, leaving no will. His heirs, however, determined to carry out his wishes. They conferred with ex-Judge Charles O. Tappan, ex-Congressman A. X. Parker, John G. McIntyre, and Prof. George H. Sweet, of this place, as to the best way of carrying out Mr. Clarkson's wishes. Mr. McIntyre and Professor Sweet were appointed a committee to visit the Manual Training schools of New York and Brooklyn, which they did last December. As a result of their investigations, it was decided that a purely trades school could not succeed in Potsdam, as it is only in great centers of population that they attract any considerable number of students. It was therefore decided that a school of greater scope than a mere trades school was wanted.

A Board of Trustees, composed of the above-named gentlemen, and Elizabeth Clarkson, Frederica Clarkson, and Annie Clarkson, has since then had charge of the business connected with the school. They have had many conferences with the leading manual training educators of this country, who have lent their aid to the architect of the school buildings, Edgar A. Josselyn, of New York, their aim being to make the group of buildings perfectly adapted to the needs of a school of technology.

The responsible head of the new school, who will be known as the Director, is Prof. Charles W. Eaton, who has just resigned his position in Pratt Institute, Brooklyn, where he had charge of the department of the science of technology. Professor Eaton is a graduate of the Massachusetts Institute of Technology and was an instructor there for several years. Afterward he was in charge of the mechanic arts department in the Teachers' College, in New York.

* * * * *

- * The school will begin its work fully endowed and with the best equipment that can be had. Mr. Clarkson's heirs have already furnished the money for the erection and equipment of the buildings, and besides have given \$100,000 as an endowment fund. The teaching force, besides the director, will consist of an instructor

in joinery and pattern work, two instructors in drawing, one in the forge shop and foundry, one in the machine shop, one in mathematics, one in English, one in domestic science and two in domestic art.

Speaking of the aim of the school, Professor Eaton said to the Tribune correspondent:

"The aim has been to cooperate with the State Normal and Training School here and give to the students in that school instruction in manual training, since the State now demands manual training instruction in the public schools in the large cities. The purpose is, then, to give instruction to such students in special lines, as domestic science, or home hygiene; domestic art, as millinery, dressmaking, etc.; instruction in form study and drawing in pencil, charcoal, and water colors, and clay work; in grammar school manual training in wood, high school manual training in joinery, wood turning, pattern making, founding, forging, and mechanical work.

"The school is to be independent of the State Normal and Training School by having special courses distinct from those in the Normal School, as technical courses in the above subjects, together with a certain amount of English and mathematics, and in domestic science a sufficient amount of chemistry and physics. Since the object is to help those who are willing to help themselves and make good citizens as well as to attain the ability to earn a good living, students can learn to become good machinists or good carpenters or good blacksmiths.

"A class will also be formed in machine design, taking up the following subjects: Mechanical drawing as a foundation, together with mathematics, English, the manual training elements, and the theory of mechanical construction, such as mechanism, the theory of the steam engine, and the strength of materials. In this course practical illustrations will be taken into the class room, and from these actual working drawings made, the various mechanical movements studied, and the necessary size of the different parts computed. The laboratory method of teaching will be followed. Formerly one studied from text-books entirely or received instruction by means of lectures, which in many cases went in one ear and out the other. Here a certain amount of material will be presented by text-books and lectures, but the truth of this instruction is tested by actual experiments in laboratory work.

"The idea here is to teach something more than a mere trade, as is done in the New York trades schools. The idea is to make something more of a boy than a simple machinist. So a certain amount of English and mathematics will be required. A student completing a three-years' course in this school will be well fitted to enter the technical schools of Cornell University and such institutions as the Massachusetts Institute of Technology; and in order to get a certificate from this school a student must have done a sufficient amount of work to enable him to enter such institutions. Students must be at least sixteen years old before they can enter the school; both sexes will be admitted. Admission will be by examination, except in the case of normal-school students, who, of course, will be qualified to enter.

"I want it to be understood that the standard of this school is to be such that a certificate signed by the trustees will be recognized as a truthful statement of honest labors. That is, no one will be allowed to slide through. It is going to be a high-standard school. I regard the opportunities of this school as unusually great, and I believe that with its fine equipment and ample endowment it will be able to do great good to the young men and women of this and other States, who in the years to come will learn in this school to fit themselves for lives of usefulness."

When the school opens its doors many normal-school students will avail themselves of its privileges. The Potsdam Normal School has 750 students.

In a letter under date of September 9th, 1895, received from the Director of this new school, announcing the proposed opening of the school and the anticipated issuing of a "Circular of Information," Director Eaton states:

Although we shall have a certain number of Trade classes, I do not wish you to know it as a Trade School, but rather as a Technical School. One of the foremost courses will be that containing our Normal work.

All our technical work will be supplemented with a thorough study of English, French or German and Mathematics. Drawing both on the Industrial and Fine Arts sides will be largely introduced into all the courses.

It being a co-educational institution it differs somewhat from the larger so called Technical Institution of the country.

Sincerely,

CHARLES W. EATON, *Director.*

As there are two special points of interest in the development of the plan of this new enterprise; one, the frank recognition of the fact that something other than a mere "Trade School" is needed, the other, arising directly from the vicinage of the State Normal and Training School for the preparation of teachers of the public schools for their duties; and, further, in view of the fact that one of the principal uses of the present Report must consist in the opportunities afforded for the comparison of the methods and courses of study in the several institutions herein described;—although, where more definite details are desirable, the several institutions should be applied to by the investigator for their official and later publications—it seems desirable to reprint here, in full, the official announcement of the purposes and methods of this new institution.

It is very interesting to observe how, in the rise of this new class of Educational Institutions, sporadically, in different localities—the original ideas of the founders, are generally modified after careful investigation of similar experiments elsewhere; and, also, how each new school is plainly individualized and influenced by its local surroundings.

In the Spring of 1896, a handsome pamphlet with a page illustration of the building of the new school, was issued by the authorities* which is here given in full.

HISTORY AND PURPOSE.

The Thomas S. Clarkson School of Technology has been founded as a memorial to one whose thought and energy was, while living, expended in trying to help some less fortunate individual, and whose personal character was a good example of moral rectitude.

Mr. Clarkson, before his sudden death, was quietly trying to formulate some plan which could be put in operation whereby young men were to have the opportunity of working under competent supervision and thus learn some trade to be followed as a means of earning their livelihood. This idea was constantly with him, and had he lived it would undoubtedly have been put in operation.

The present plan to carry out his wish to aid young men and young women who show a desire to aid themselves is being most excellently carried out by the generous support and advice of the Misses Clarkson, sisters of the deceased, and will be based upon the following lines:

1. Technical: Training the student for an engineering profession and for special skill in the various branches of industrial and domestic arts and applied sciences by giving instruction in such subjects as are found to develop the qualities of self-reliance, sound judgment, and logical reasoning, together with the laboratory methods of learning, which have been acknowledged to be the best means of giving lasting results.

2. Normal: Giving the student a thorough preparation for the profession of a teacher of manual training subjects in the public school service.

3. Liberal: Believing that there should be added to the scientific and technical studies and exercises, which tend to make men resolute, exact, and strong, at least a moderate amount of those culture studies which tend to make men broad and liberal, a certain amount of this work has been added to the other studies.

An application having been filed in due form, the school was incorporated by and admitted to the University of the State of New York, to be known as "The Thomas S. Clarkson Memorial School of Technology," and an absolute charter was executed on March 19, 1896, granting to the board of trustees the power to confer the degree of bachelor of science, and grant diplomas or certificates to such as in their judgment may be worthy.

Although well equipped, and endowed with a generous amount, all sums received from tuitions will be used to secure the best talent and facilities for the proper advancement of the aims of the school.

The intention is not to make this a local institution; students from any other section may be enrolled upon the fulfilling of the necessary requirements for admission.

* The Thomas S. Clarkson Memorial School of Technology. Potsdam, N. Y. First Circular of Information. 1896-1897. Pp. 27.

Both sexes are admitted on equal footing to the privileges of the school.

Location.—The school is located on Main street, in the village of Potsdam, county of St. Lawrence, State of New York, upon high ground and in a thoroughly healthy section.

Potsdam is on the line of the Rome, Watertown and Ogdensburg Railroad, and is easy of access from all points.

Buildings and equipment.—The buildings consist of one main building, 87 by 57 feet, three stories and a basement high, with one wing on each side, 180 by 36 feet, one story high, all constructed of Potsdam red sandstone, with roofs of Spanish tile, with Hayes patent skylights on the wings.

The first floor of the main building is of fireproof construction, consisting of iron girders with brick arches turned between them; the stair well is also of fireproof construction, having iron stairs with slate treads and iron and concrete landings, thus forming a safe exit in case of fire. As an extra precaution, a fire line has been run to all portions of the buildings.

The floors of the wings are of concrete, with maple floors laid on cedar sleepers embedded in concrete, except those of the forge shop and foundry, which are of brick and concrete respectively.

The buildings are heated and ventilated by means of a fan and indirect radiators; the fan is of sufficient capacity to furnish 300 cubic feet of air per student during each ten minutes; an auxiliary heating system has also been installed, consisting of low-pressure steam radiators and coils.

The buildings are lighted throughout with electricity and gas, both of which are generated by the school plant.

The equipment consists of two 80-horsepower boilers which are to furnish the steam for the engines and the heating system.

Power for the shops is supplied by electric motors, electricity for which is generated by two direct connected upright 40-horsepower engines and 25 kilowatt generators. All electric work is of the most approved type and is installed so that it can be used as a means of instruction for the electrical engineering students.

The machine laboratory is fitted with the latest and most improved type of lathes, planers, shapers, milling machines, etc., each having its own full complement of tools, together with all those special tools needed in a well-arranged machine shop.

The wood laboratory has its benches, turning lathes, and the necessary mill tools, as circular saws, hand saws, etc.

The forge laboratory is equipped with forges, tools, etc., the blast for the forges being furnished by an electric blower.

The foundry has all that is needed to give thorough instruction in the art of foundry, the casts being made in lead and plaster.

The chemical and physical laboratories have all of the apparatus needed to carry on the work.

In the selection of the equipment for the domestic science and art laboratories and for the several drawing rooms, special care was exercised to choose only articles which would best serve the purposes for which they were intended, and nothing will be found wanting that is needed.

Ample provision has been made for the illustration, by means of the stereopticon, of lectures upon all subjects in connection with the school work.

The library will be of the laboratory kind, supplied with the necessary tools and apparatus in the shape of books upon physics, mechanics, electricity, public hygiene, drawing, and all kindred subjects, and these tools will be used as freely as are those of the wood or forge shops.

A large assembly hall, with a seating capacity of nearly 600, is fitted with folding opera chairs and all the necessary outfit for illustrated lectures.

Organization.—The school is under the control of a board of trustees, with the director, *ex officio*, as executive officer.

The best interests of the various classes are discussed at the meetings of the instructors, and recommendations are made to the trustees.

Lectures.—Lectures will be given from time to time upon those subjects having a direct relation to the work of the school and to the general improvement of the students.

Degrees.—The degree of Bachelor of Science will be conferred upon those successfully completing the required amount of work in the engineering courses of study, issued under the seals of the Institution and of the University of the State of New York.

To be entitled to a degree the student must have completed the prescribed studies and exercises of the course, and pass final examinations upon the same. He must also prepare, during the last year of his attendance, a thesis upon some subject relating particularly to his course, or make some original report of machines, engi-

neering work or discoveries relating to his special subject, or an account of some original research made by himself.

This thesis must be approved and signed by the Director and President of the Board of Trustees.

Diplomas.—The diploma of the school will be given to those students who satisfactorily complete the full amount of work required for any of the regular courses of the school, and who pass successfully the final examinations of such courses.

Certificates.—A certificate signed by the Director and the President of the Board of Trustees will be given to those successfully completing the work of any one of the special classes, with the name of the class or classes in which the student studied inscribed upon it.

COURSES OF INSTRUCTION.

Course 1, mechanical drawing and machine design; course 2, electrical engineering; course 3, domestic science and art; course 4, machine work and smithing; course 5, woodworking and pattern making; course 6, normal manual training.

For students who desire to fit themselves for teachers in any special branch of Manual Training, a course of one year will be arranged.

The founders of the school, understanding the need of well-equipped teachers for the so-called new education in the public schools of the State, have generously offered the advantages of its equipment and teachers trained in this specific work to the board of public instruction of the State of New York, for the use of students of the State Normal Schools, to enable such students to prepare themselves for the public-school service, at a nominal sum mentioned under "Tuition." These sums are intended to cover the cost of the materials used, the cost of the instruction and the wear and tear of the equipment being defrayed by the founders.

Special classes in Manual Training for pupils of the public schools of the village will be opened to such as are desirous of availing themselves of the opportunity, within the limits of the accommodations, preference being given to those who show the most earnest effort in their other studies.

A certificate will be granted those who satisfactorily complete the work of any of these special classes.

In connection with the electrical engineering course, other engineering courses as may be deemed best to make the work of the school the most beneficial in its results, and at the same time appear to the trustees as being for the best interests of the school, will be added from year to year, when the occasion demands. And this will indicate the direction of the future growth of the school.

Any student desiring to take any of the subjects taught in the Potsdam State Normal School, and not found in the curriculum of the School of Technology, will have the opportunity of doing so, upon the payment of a small amount.

REQUIREMENTS FOR ADMISSION.

To courses 1, 3, 4, and 5.

The student must be at least 16 years of age, and pass satisfactorily the examinations in the following subjects:

Arithmetic: This includes fractions, percentage, proportion, and mensuration.

Geography: This includes political and commercial geography, with some knowledge of the drainage basins, watersheds, ocean currents, and their relations and adaptations to commercial intercourse, both domestic and international.

English composition: A letter describing schools attended, the time spent and subjects studied, and the purpose in coming to this school, must be written during the examination period, with all the words spelled correctly and the sentences formed in a grammatical and concise manner.

To course 2.

Algebra: Fundamental operations; use of parentheses; factoring; highest common factor; least common multiple; fractions, simple and complex; simple equations, with one or more unknown quantities; involution of monomials and polynomials; evolution of monomials and polynomials and cube root of numbers; the theory of exponents, with applications; radicals and solution of equations containing radicals; quadratic equations; ratio and proportion; arithmetical and geometrical progression. A satisfactory treatment of the topics in algebra may be found in any of the following text-books: Wells' Academic Algebra, Wentworth's School Algebra, or Bradbury and Emery's Academic Algebra.

Plane geometry: As much as is contained in the first five books of Wells' or Wentworth's geometries.

Arithmetic: As much as is contained in the academic arithmetics, including the metric system of weights and measures.

French: The amount of French necessary for entrance would be represented approximately by the Whitney's Practical French Grammar. The candidates are expected to be able to read French at sight and to translate readily simple English into French.

English: The candidate will be required to write, in an hour, on some subject familiar to him, a short English composition, correct in spelling, punctuation, grammar, idiom, and natural in style. Judgment will be given upon how well rather than upon how much is written.

The candidate will also be required to correct specimens of bad English set for him at the time of the examination.

With the following books the applicant must be familiar. Those marked (a) are to be read and those marked (b) are to be thoroughly studied, so that the candidate will be able to pass an examination upon their subject-matter and structure.

For 1896:

- (a) Shakespeare's *Midsummer Night's Dream*; Defoe's *History of the Plague in London*; Irving's *Tales of a Traveller*; Scott's *Woodstock*; Macaulay's *Essay on Milton*; Longfellow's *Evangeline*; George Eliot's *Silas Marner*.
- (b) Shakespeare's *Merchant of Venice*; Milton's *L'Allegro, Il Penseroso, Comus, and Lycidas*; Webster's *First Bunker Hill Oration*.

For 1897:

- (a) Shakespeare's *As You Like It*; Defoe's *Journal of the Plague Year in London*; Irving's *Tales of a Traveller*; Hawthorne's *Twice-told Tales*; Longfellow's *Evangeline*; George Eliot's *Silas Marner*.
- (b) Shakespeare's *Merchant of Venice*; Burke's *Speech on the Conciliation with America*; Scott's *Marmion*; Macaulay's *Life of Samuel Johnson*.

For 1898:

- (a) Milton's *Paradise Lost*, books 1 and 2; Pope's *Iliad*, books 1 and 22; The *Sir Roger de Coverley Papers in the Spectator*; Goldsmith's *The Vicar of Wakefield*; Coleridge's *Rime of the Ancient Mariner*; Southey's *Life of Nelson*; Carlyle's *Essay on Burns*; Lowell's *Vision of Sir Launfal*; Hawthorne's *The House of the Seven Gables*.
- (b) Shakespeare's *Macbeth*; Burke's *Speech on Conciliation with America*; De Quincey's *Flight of a Tartar Tribe*; Tennyson's *The Princess*.

History. United States History to the present time, as found in Fiske's *History of the United States for Schools*.

To course 6.

Students presenting diplomas of Normal Schools, Colleges, Universities, High Schools, Academies, Academic Departments of Union Schools, or Regent's Diplomas may be admitted to the regular Normal Manual-Training Course without an examination. Applicants for the special Manual-Training classes not students of a State Normal School must pass examinations as for courses 1, 3, 4, and 5. For Normal students, see course 6.

For admission to the classes for the public school children of the village, blanks signed by the principal of their school, stating that the candidates are earnest students, must be presented with the applications.

Entrance examinations will be held at the school building from 9 a. m. to 12 m., and from 2 p. m. to 4 p. m., Friday and Saturday, August 28 and 29, 1896.

For further information and application blanks,* address the Director, Charles W. Eaton, Clarkson School of Technology, Potsdam, N. Y.

*APPLICATION BLANK.

[The Thomas S. Clarkson Memorial School of Technology, Potsdam, N. Y.]

Persons desiring to enter the school will please observe the following directions:

1. Answer all the questions fully.
2. Place date of mailing upon the blank.
3. Send applications to the Director of the School before the date of the entrance examinations.

CHARLES W. EATON,
Director Clarkson School of Technology, Potsdam, N. Y.

Applicants are requested to read the following regulations:

The tuition for each term is payable in advance.

No part of the tuition fee will be refunded to pupils who withdraw or are dismissed from the school before the close of the term for which the fee is paid.

Promptness and regularity of attendance upon all the exercises of the course are

TUITION.

Course 1, per term of twenty weeks.....	\$20.00
Course 2, per term of twenty weeks.....	40.00
Course 3, per term of twenty weeks.....	20.00
Course 4, per term of twenty weeks.....	20.00
Course 5, per term of twenty weeks.....	20.00
Course 6 per term of twenty weeks.....	30.00

Special manual normal training classes.

Grammar grade work	6.00
Joinery.....	8.00
Pattern making and turning	8.00
Machine work and chipping and filing	10.00
Smithing	10.00
Sewing, dressmaking, or millinery.....	8.00
Cookery.....	8.00

These tuitions cover and include all necessary supplies and tools required by the student for the work in the laboratories and shops, which on an average would aggregate at least one-half of the tuitions.

COST OF LIVING.

Board can be had in private families at rates varying from \$3.00 to \$4.00 per week, including washing, fuel, and lights.

Those preferring to board themselves can obtain furnished rooms at from \$0.50 to \$1.00 per week.

A map of the village, with many boarding places marked thereon, will be hung in the corridor of the school building for the week preceding the opening of the school.

DETAILS OF THE COURSES OF INSTRUCTION.

MECHANICAL DRAWING AND MACHINE DESIGN.

First year.

First term.—Drawing, free-hand; drawing, mechanical; algebra; physics; English; woodworking.

Second term.—Drawing, free-hand; drawing, mechanical; algebra; plane geometry; physics and mechanics; turning and pattern making; sheet-metal work (principles of surface development); English.

absolutely insisted upon. Continued absence, without notification, will be considered as a permanent withdrawal.

189__

1. Name in full,
2. Residence,
3. Age,
4. What class do you wish to enter?
5. Are you attending school? If so, where?
6. If not now in school, where did you last attend?
7. Have you a regular occupation? If so, what?
8. What do you intend to make your future occupation?
9. Give name and address of parent or guardian.
10. Give name and address of a person to whom you can refer for a testimonial of character.

Second year.

First term.—Drawing, free-hand; drawing, mechanical; plane geometry; metallurgy of iron and steel; strength of materials; forging and molding; English.

Second term.—Drawing, free-hand; drawing, mechanical; solid geometry; principles of machine construction; theory of the steam engine; machine work; English.

ELECTRICAL ENGINEERING.

First year.

First term.—Algebra (advanced); geometry (solid); drawing, mechanical; drawing, free-hand; chemistry, general lectures and recitations; chemistry, laboratory; English; German; joinery.

Second term.—Plane trigonometry; analytic geometry; chemistry, lectures and recitations; chemistry, laboratory; drawing, mechanical; drawing, free-hand; English; German; joinery.

Second year.

First term.—Physics, acoustics; descriptive geometry and stereotomy; differential calculus; drawing, mechanical; mechanism; English; German; wood turning and pattern work.

Second term.—Physics, lectures; physics, laboratory; magnetism; mechanism, gear teeth, machine tools; drawing, mechanical; English; German; forging.

Third year.

First term.—Physics, lectures; physics, laboratory; electricity; steam; drawing, mechanical; telegraphy and telephony; integral calculus; English; German; machine work.

Second term.—Physics, lectures; physics, laboratory; electricity; steam; statics; drawing, mechanical; strength of materials; English; commercial law; machine work.

Fourth year.

First term.—Technical applications of electricity to telephony, electric lighting, electrical generation and transmission of power, etc.; physics, laboratory; hydraulics; photometry; steam and electrical combinations; strength of materials; constructive design and drawing.

Second term.—Technical applications of electricity to welding; railroads, elevators, signaling, etc.; measurements of electric currents; theoretical electricity; theses; cost of installation and design of electric plants.

DOMESTIC SCIENCE AND ART.

First year.

First term.—Physics and chemistry; physiology and hygiene; cookery; sewing, plain; drawing; study of textiles.

Second term.—Chemistry of foods; emergencies and home nursing; cookery; sewing (care of machines, etc.); millinery; study of headdresses.

Second year.

First term.—Household economy; marketing; cookery; laundry work, mending of laundry work; dressmaking; drawing, free-hand; millinery, study of costumes.

Second term.—Cookery and the method of properly setting and serving the table; arrangement of the home; public hygiene; drawing, free-hand; dressmaking; design in connection with dressmaking and millinery.

MACHINE WORK AND SMITHING.

First year.

First term.—Mathematics; English; drawing, free-hand sketches, geometrical problems and simple scale drawings; forging, care of fire, drawing, upsetting and forming of iron; metal work, chipping and filing.

Second term.—Mathematics; English; drawing, working drawings; forging, forming, and welding; metal work, lathe work; metallurgy of iron and steel (optional).

Second year.

First term.—Mathematics; history; English; drawing, machine details; forging, tempering and forming of tools; metal work, lathe and shaper work; strength of materials (optional); ornamental work, forging (optional).

Second term.—Theory of machines; civics; English; metal work, use of lathes, shapers, planers, drills, and milling tools; ornamental ironwork (optional); drawing, intersection of solids for sheet-metal work.

WOODWORKING AND PATTERN MAKING.

First year.

First term.—Mathematics; English; drawing, free-hand sketches, geometrical problems, and simple scale drawings; woodwork, joinery, and care of tools; physical geography as applied to forest growth.

Second term.—Mathematics; English; drawing, working drawings; woodwork—joinery continued, and turning; principles of construction.

Second year.

First term.—Mathematics; history; English; drawing, drawing of architectural details; woodworking, pattern making, and study of founding; building construction.

Second term.—Theory of strength of materials; civics; English; drawing, architectural; woodwork, constructive work, laying out hip, valley, and jack rafters, windows, doors, studding, bridging, and cornices with practical applications; lectures on mill tools and woodworking machinery.

NORMAL MANUAL TRAINING.

The introduction of manual training into the public school curriculum in so many of our cities, has lead to a great demand for competent teachers to take charge of these subjects. That the ordinary teacher can not take this responsibility has been demonstrated, and it is to avoid these failures that many institutions are introducing normal classes for the training of teachers for this special work.

The teachers of this branch of education must have the same qualifications as are needed to teach any of the other studies with the necessary special training added. This course is designed to give to such all the information concerning the development of the tools used, the cost of installing the outfit in other schools, besides practical work in the discipline and teaching of classes.

The progress of the work in many other schools and the varied series of exercises used by them will be compared and discussed, and by this means their successes may be utilized and their failures avoided.

Since, in the presentation of these exercises to the class, as much depends upon the skill of the instructor in making the model as upon the method of putting it before the class, the normal student must complete the series of models while his other work is being carried on.

The instruction will be divided into the manual work for boys and the manual work for girls.

WORK OF THE SCHOOL IN DETAIL.

ELEMENTS OF MECHANICS.

Under this head will be found a complete study of the elements of mechanism, consisting of the laws of the relative movements of the parts of machines; the velocity ratios of these parts when the power is transmitted by means of belts, gears, or by frictional contact; the forms and kinds of gear teeth and the method of laying them out; the calculation and selection of the various members of link-work combinations.

Problems containing the use of cams to cause a given movement to be realized from a certain other given motion are studied, involving the expenditure of thoughtful study and the actual laying out on paper of the necessary cam forms to accomplish the required results.

After a thorough understanding of the motions of the parts of the machine has been acquired through the study of mechanism, the ability to design those parts, making each of just the proper size and shape to be pleasing in appearance and of a durable character, will be obtained through the study of strength of materials.

STRENGTH OF MATERIALS.

This embraces the behavior of materials of different kinds under the application of the strain of tension, compression, shearing or beam action. The practical problems given with this subject are taken from actual engineering structures, and by their solution one will be able to calculate the necessary size of a beam to carry a given weight, how the trussed roof must be built to withstand the winter snows and winds, how the riveted joint of the steam boiler must be put together to have the safety of those about them insured, and how the mighty rivers can be made passable for the heavily laden trains by means of properly designed bridges.

The reasons for the selection of cast iron for one part and its rejection for another, of hard steel at one time and soft steel at another time, of a hollow shaft or column for this place and a solid one for that place, will be thoroughly investigated and understood.

The resisting qualities of the many kinds of building stones, of the limes and cements, against the action of the weather, water, and pressure will be examined, and the proper method of building the foundations for large structures under common and uncommon conditions will be explained.

THEORY OF THE STEAM ENGINE.

From the coal fields to the power of the locomotive seems a large gap, but the cycle is complete and follows fixed laws, the difference in intensity being only dependent upon the skill of the designer of the engines and boilers. It remains, then, for the designer to make the entire system both efficient and economical.

The exercises in this subject consist of lectures, recitations, and experiments performed upon the engine and boiler plant of the school.

Instruction will be given upon the following points:

The processes of the combustion of fuel and the laws which govern the production of heat by this means; the realization of power to do work at the steam engine by the transference of the stored-up energy in the steam; the economy of the simple, compound, and triple or quadruple expansion engines will be compared; the reasons for the use of the various kinds of governors and condensers, and the principles underlying the construction of each will be examined; the different kinds of mill, marine, and locomotive types of engines, and the Cornish, return fire tubular, the water tubular, the upright, and locomotive types of boilers, with the proper construction of each, will be studied in their sequential order.

Experience in valve setting, making actual engine and boiler tests, and calculating the efficiency of each will be acquired, and an intimate acquaintance with all the facts in connection with steam engines and boilers obtained.

DRAWING.

Mechanical drawing as carried on in the various courses consists of the proper care and use of the different drawing instruments; their practical application to geometrical problems; the theory underlying the work of orthographic projections; the principles of working drawings, plans, elevations, sections, etc.; intersection of solids and development of surfaces, with practical problems in sheet metal work, machine, engine, and agricultural details; isometric drawing, as far as it can be used in practice, to illustrate the appearance of the object in one drawing.

The shop method of assembling and filing the drawings of a machine, the tracing and taking of blue prints, and special problems in machine design and machine construction, are placed in the mechanical drawing and machine design, and in the engineering courses, together with the application of mechanical drawing to descriptive geometry and stereotomy in the latter course.

The free-hand drawing is carried along side by side with the instrumental and forms the basis of the early representations, from which the exact working drawings are made.

The division which relates to the appearance of form is presented through the perspective drawings, outline and light and shade from cast. The principles underlying good design, pencil and pen and ink representations, also form a part of the free-hand work.

ENGLISH.

The aim in the English work is to give to the student an ability to express himself in a clear and concise manner, to make him conversant with the derivation of words, with the forms of grammatical sentences and with the styles adopted by many of the best writers. *Digitized by Microsoft®*

By means of the supplementary reading, the student is enabled to keep in touch with the progress in all matters pertaining to his special work at school, and many of the written exercises will consist of essays or reports upon knowledge acquired by this means. A full supply of the magazines and papers of the day, whose articles are written by men of authority, upon all the technical subjects, are on the shelves ready for constant reference.

GERMAN.

The object of the instruction in German is not to attempt the study of the literature of the Germans, but rather to enable the student to acquire such facility in translation that he may avail himself of foreign works relating to his professional work. For this, however, a systematic study of the structure of the language is deemed necessary; but in the accomplishment of this end, practical work with the language itself, including written and oral exercises, is taken, rather than study of the abstract rules of grammar.

ELECTRICITY.

The special work of the electrical course will contain instruction in all the different subjects necessary to the complete knowledge of the principles of electricity as applied to magnetism and the generation of electricity by dynamos; its accumulation and redistribution by the storage batteries; its application to power transmission for mechanical work by motors; its useful action in the arc and incandescent lamps and the calculation of the wiring for the same; its application to the science of telegraphy and telephony and the considerations to be taken into account in laying out central and isolated plants for this service as well as that for the electric lighting; its advantages and uses in the electric railroad work, and the many difficulties to be overcome in the severe conditions of extreme variations of loads; its measurement and record by means of photography; its adaption to electro-metallurgy and electric welding; and finally a study of station design and operation, while the first cost and the various items that go to make up the running expenses are systematically arranged.

The locating and remedying faults in dynamos, motors, and the lines of a system of wiring by the aid of the magneto, battery and galvanometer, voltmeter, bridge, fuse wire or incandescent lamps, is accomplished and explained.

The tests made by the students upon the apparatus of the school will prove of inestimable value to them, since by actually doing the work it is easier to fix the principles under consideration than by any course of lectures or recitations.

PHYSICS.

The instruction in physics is carried along upon two lines, one of which consists of a series of lectures and recitations, including the study of the general and theoretical side of the subject, and the other, of the work in the laboratory supplementing and strengthening the work of the former, and as a future aid to both the class room and laboratory work a large number of practical examples involving the various elements, as they are studied, are given out for solution.

By the means of this work the student will become acquainted with the laws governing the actions of nature around him, such as gravity, motion, force, velocity, mass and centrifugal force; the law of levers with its application, of falling bodies as shown by the clock pendulum, of balance, composition, and resolution of forces.

The osmotic transference of the sap in the trees, the capillary action of the oil in the lamp wick, the mixture and diffusion of liquids, pressure and its action in both liquids and gases, the law of expansion of gases, of pumps, of transmission of energy by wave motion, all of these will be investigated.

Acoustics, light, heat, magnetism, and electricity in its elements will all be introduced.

The lectures will be demonstrated by experiments worked out before the class by the instructor; in the laboratory, however, the student must do and prove for himself.

CHEMISTRY.

As in physics, chemistry will be taught by both class-room and laboratory work. The class-room work is intended to prepare the student for his work in the laboratory, and the work in the laboratory to verify the laws brought out in the class room.

In the laboratory the student receives instruction in chemical manipulation, and performs a series of experiments designed to illustrate the properties of the more important elements, and the laws of chemical action.

The elementary work in qualitative analysis supplements that of the inorganic chemistry, and the student is given practice in the solution of chemical problems.

In inorganic chemistry the student acquires direct personal knowledge of the simpler phenomena of the various chemical changes and compounds, and is made familiar with the chief applications of this science in commercial and industrial processes.

In qualitative analysis the student receives practical instruction in the determination of common acids, practice in the analysis of unknown liquid mixtures and drinking waters, giving especial attention to the analytical reactions of each base.

The study of the element carbon is carried on in connection with the various carbon compounds, more especially those compounds found in the mineral kingdom, as the various forms of coal, graphite, petroleum, asphaltum, and the different varieties of limestone, chalk, and marble. The dependence which all vegetable life has upon the compound of carbon which exists in the atmosphere will also be studied.

MATHEMATICS.

The greatest importance must be attached to the study of mathematics, both as a means of mental discipline, and as affording an especially solid basis for future instruction in the other work.

The divisions of the work in mathematics will be as follows: Algebra, geometry, trigonometry, analytic geometry, differential calculus and integral calculus.

The constant endeavor in all the work in mathematics is, to strengthen and develop the student's power of logical reasoning, and to this end much emphasis is given through the course to the solution of original problems.

MANUAL WORK.

While we recognize the importance of mathematics, drawing and English, and while the student is gaining knowledge through these channels, we at the same time recognize the equal value of the manual work to reinforce the academic studies. In all the systematic work at the bench, lathe, forge, sewing or cooking table, he is acquiring those essential qualities of care, patience, promptness, celerity, skill, and above all, a confidence in his own powers, and strength of judgment in shaping means to the end. This work consists of woodworking, metal working, cookery, and sewing.

WOOD-WORKING.

In the joinery or bench-work, the exercises are designed to give practice in the use of saws, planes, chisels, and other woodworking tools. By the use of the measuring tools the work is laid out with care and diligence and teaches the elements of precision and accuracy; but it is for the work at the wood-turning lathe to develop the true appreciation of form in design, for in the former work, straight lines, square edges, and plane surfaces are used, while in the latter, the free-hand curved surfaces formed by the turning tools, guided and controlled by the hand and will of the operator, give those subtle curves and beautiful forms which appeal to the cultivated senses.

In the art of pattern making, both the processes of joinery and turning are utilized, and after a thorough understanding of the shrinkage of metals and the draft of the pattern, etc., the construction of actual patterns is undertaken, and from the simple block the progress to those pieces requiring cores, and cores supported by other cores, partings, and all the other intricate and delicate points which make this art so exact, are executed. Those patterns are then taken to the foundry and there their good qualities or faults are discovered. In the foundry the casts are made in lead or plaster.

METAL WORKING.

Forging embraces in its methods those qualifications necessary to develop the ability to act quickly and think more quickly, as is so well brought forth by the trite saying, "Strike while the iron is hot." In other work one can deliberate, in this, deliberation gives cold iron.

The work consists of exercises in drawing, bending, forming, and welding, and the forming and tempering of the tools of steel used in the machine shop; ornamental ironwork is carried along in the course.

In the machine shop the first exercise consists of the chipping and filing of flat, round, and irregular surfaces, and making of the accurate instruments, as the calipers, try-square, and inside and outside gauges.

MACHINE WORK.

The first work with machine tools consists of the exercises of turning a cylinder, turning a taper, screw cutting, and so on to the more difficult exercises requiring the use of all the various tools of the machine shop, as hand lathes, engine lathes, planing machines, shapers, milling machines, drills, and grinders.

Experience in the patient and thoughtful work of the manufacture of twist drills, cutters for milling tools, and gear teeth, reamers, etc., will be gained, together with the knowledge and understanding of the principles underlying the construction of the machines and tools for the many and different demands made upon them.

The constructive work taken toward the end of the course forms a summary of the different elements previously studied.

DOMESTIC SCIENCE.

The purpose in the domestic science course is to afford training and instruction in those special subjects which must be considered in the daily administration of every home. A knowledge of the kinds of food, the proper selection from the many kinds, and the best methods of preparing the same, is necessary to the most healthful and pleasing manner of living. This work, to be at its best, must include cookery, laundry work, household science, emergencies, home nursing, public and private hygiene.

In the cookery the student obtains the knowledge of the preparation of cereals, vegetables, breads, meats, soups, desserts, etc., with the preparation of a breakfast, a luncheon, and a dinner.

In the laundry work an experience with the various qualities of soaps, starches, washing fluids, bleaching powders and bluing, as well as a knowledge of their chemical actions, is acquired.

In household science and hygiene an acquaintance is made with the care and arrangement of the person and the home to give the best sanitary results, while in the emergencies and home nursing the ills due to our sanitary conditions, accidents, or the many other kinds of sickness, are studied so far as the care of the patient and preparation of invalid food is concerned.

DOMESTIC ART.

As the condition of living depends so much upon the application of those principles studied in domestic science, so the pleasures and comforts of a healthy body are enhanced by the application of those principles found under the head of domestic art, as the proper decoration of the person. These include sewing, dressmaking, and millinery.

Sewing comprises the various kinds of stitches used in hand sewing, including patching and darning. The use and care of the sewing machine is then introduced, and the drafting, fitting, and making of the simplest clothing.

Dressmaking is a continuation of the sewing, consisting of the draughting, tracing, and cutting of the close-fitting garments, and that the student may have the ability to originate and make tasteful garments, talks are given on hygiene, selection of fabrics, and on harmony of color in dress.

The aim in millinery is to give instruction leading to the cultivation of the artistic taste of the student, both as to color and design, in order that it may be applied in a skillful and artistic manner in the manufacture of pleasing head gear.

The dexterity in the making and arranging of bows and the harmonious treatment of colors are to be acquired by constant practice and competent criticism. This practice work is executed upon hat frames, using colored cotton and flannel to represent the customary silks and ribbons.

The student must finally make a hat or bonnet from an original design, drawn and colored beforehand.

Trustees and Executive Committee.—Elizabeth Clarkson, Frederica Clarkson, John G. McIntyre, A. M., President; Annie Clarkson, Treasurer; George H. Sweet, A. M., LL. B., Secretary; Abraham X. Parker, B. A.; Edwin A. Merritt, LL. D.; Charles W. Eaton, Director.

VIII.

THE INDUSTRIAL EDUCATION MOVEMENT AS UNDERTAKEN BY THE YOUNG MENS CHRISTIAN ASSOCIATIONS.

The rapidly growing interest throughout the community in the movement for giving to American youth, available opportunities for obtaining direct educational training in the Industrial Arts, is shown by the fact that in various localities, some few of the Young Mens Christian Associations have recently opened classes for such elementary training in industries.

This interest is further emphasized by the organization, in October, 1892, of the "Educational Department of the International Committee"; and by the efforts since made by that "Department" to promote the opening of similar industrial classes in the numerous associations throughout the country.

"The Evening Schools," which for some twenty years were carried on by these Associations, gave the elements of a common school, or of a commercial education, for those who either had enjoyed no early school training, or for those who, although they had passed the age limit of attendance in the public schools, still wished to pursue their studies.

As the great majority of those attending these evening classes were self supporting young men, who earnestly desired to increase their earning capacity as workers; it follows, almost as a matter of course, that the direct money value to the pupils of these new methods of training should be most prominently put forward in such arguments as were first advanced in favor of their general introduction.

These Associations have always made free use of the printing press; and a number of pamphlets, tracts, outlines of study and suggestions, Reports of proceedings at conventions, etc., etc., bearing on this new educational movement, have been issued for their use by "The International Committee of The Young Mens Christian Associations, in New York City."

In addition to these official publications, to be freely quoted from later in this paper, Mr. George B. Hodge, the energetic and enthusiastic Secretary of this International Committee, (to whose courtesy I am indebted for the material here made use of,) has found, for his appeals on these topics to a larger public, an additional organ in the notable new monthly publication entitled "Education Extension" first issued in June, 1895, at Ypsilanti, Michigan. This publication "devoted to the advancement of Education in the Home, School, and Business", is issued in Quarto size.

Some thirty-four authors, each in charge of a separate Department, in addition to the Editor, President P. Rogers Cleary, contributed to the first number.

As each writer is given a full page, or more, for his special subject; and as this is to be retained in succeeding issues, as a permanent feature of the magazine; it follows, that each topic will receive, as the months go by, full and consistent consideration.

The varied subjects thus treated cover a wide range, and in the numbers of the magazine already issued form a valuable collection of papers; some of which can hardly fail to appeal to those who may be concerned in any phase of education in its complex relations to all, or to some one, of the multifarious interests of society.

In his initial article Mr. Hodge announces, under the permanent title "Industrial Education," his intention to treat in a series of articles, this form of education in its varied relations to the schools and industries, to the individual and to the community. In short, he proposes an exhaustive study of the subject in all its phases. Credit is given for the inspiration and thought of much of the material in these articles to the publications of the U. S. Bureau of Education and to other sources. As illustrating his attitude towards this department of educational activity, the larger part of his opening paper is here given.

INDUSTRIAL EDUCATION, BY GEORGE B. HODGE.

* * * In its broad sense industrial education concerns all persons and is the adapting of education to the practical needs of life. In its narrow sense it may mean simply that training designed to fit a person for expert performance in some special trade. In these respects it is a subject of peculiarly wide range of thought and thus the more liable to be misunderstood in its treatment. It will be necessary, therefore, to state what, for the purposes of this periodical, may be construed to be included in the terms used.

INDUSTRIAL EDUCATION A COMPREHENSIVE TERM.

While industrial education in a liberal interpretation, may include the four systems of education, commonly known as kindergarten, manual training, trade or apprentice schools, and higher technical instruction; for our purposes attention is called more especially to the last three, with the understanding that beneath and through them all there shall be emphatically stamped the beneficial presence and moulding influences of that new spirit of industrial art so perceptibly felt in the mind and work of our leading educators.

* * * * *
Manual training may signify that system of hand, eye and mind training and instruction whose object is for educational discipline. Examples of this system are the Chicago, Toledo, and St. Louis Manual Training Schools.

* * * * *
The Trade School may signify that system of training and instruction to develop skill and give the apprentice a thorough and practical knowledge of some trade. This is well illustrated in the New York Trade Schools, or those of the State Reformatory of New York at Elmira. Much general information may be and is incidentally acquired by the apprentice in a trade school, but its chief object is not education, whereas in manual training schools it is the primary, and in the best schools, the only object.

Higher technical instruction (specialized instruction) including technical schools and institutes of technology, will be referred to less frequently, but may signify an advance trade or apprentice school, where in addition to the trade taught, there is also explained and demonstrated the scientific principles on which it is based in its application to art and industry, as in the weaving schools of Philadelphia, or England.

Institutes of technology and the university engineering schools, are the highest in the scale and lead to professional degrees in engineering. The combination of manual training and trade schools in one institution is seen to best advantage in the Pratt Institute of Brooklyn, N. Y.

TENDENCY TO THE INCREASE OF INDUSTRIAL AND TECHNICAL EDUCATION.

The demand for this kind of life training which has grown so rapidly in recent years, has come from a dissatisfied public whose strong convictions have been, that the common schools did not fit as well as they might for the practical needs of life. The courses of instruction were filled too largely with subjects disciplinary in value. They were told education was training of the faculties and that the knowledge to be obtained for practical daily use was of but secondary importance.

If we compare the curricula of our secondary schools of to-day with those of but fifteen years since, we shall see a marked difference. The disciplinary and useful subjects are assuming much different relations. Subjects in science, art and political lines are increasing while the classics and mathematics are diminishing. The courses of study seem to be a constant struggle between the ideas of the Middle Ages and modern times. Those who to-day advocate the classics for mental discipline forget that these languages were originally taught "not for discipline so much as for their practical usefulness to those who were to enter the work of the church and to enable the upper classes, who at that time were the only educated part of the public, to read the literature of Greece and Rome and communicate with learned men in all parts of the world."

The relation of education to the life interests and daily needs of men must be and is vital. As the activities, habits, conditions and practical needs for best living of a people of any period, so generally according to the history of education, have the educational systems been modified to secure best results. In Ancient times their education, therefore, was mainly physical, religious and ethical to meet the needs and demands of the people. In the Middle Ages it was mainly classical and religious; latin, greek and the scriptures were the principal subjects and "every study was esteemed by its bearing on the Bible." From a study of Comenius, Laurie and other authorities, we find the classics and scriptures were taught because of their "usefulness in the life of all educated men of the times."

Concerning the ill adaptation of some courses of study to the times, Locke, many years ago, well said, and to-day they are earnestly repeated, "Can anything be more ridiculous, than a father wasting his own money and his son's time in setting him to learn the Roman language, when at the same time he designs him for a trade wherein he, having no use for latin, fails not to forget that little which 'tis ten to one he abhors for the ill usage it procured him." Rousseau strikes the keynote of industrial education in his "Emile," where he advises to study nature and things. Poor Rousseau, while right, was far in advance of his time in this respect, for then the popular education was the study of words and books. While very much may be said in favor of that education which trains simply in the abstract to observe accurately, recall easily, and reason correctly, yet, as in the past there has been a more or less active relationship between the systems of education and the practical needs of life, so in the present we desire to see a more vital connection between our courses of instruction and the preparation for the duties of life experienced by the great mass of people outside the direct influences of our secondary schools and higher institutions.

MODERN EDUCATIONAL NEEDS.

A curriculum that would have sufficed for the majority of cases twenty years ago, is sadly deficient to-day. Many occupations or professions demanding advanced scientific knowledge and higher training are entirely new, while others have largely increased. For instance, all dealings with electricity, or the great majority of those concerning the use of steam, and the circumstances which have changed the conditions of trade and commerce. The methods of production and distribution have completely changed and are dependent to a much greater extent upon acquired knowledge and skill than upon unaided native intelligence.

If education is to have any relation to the needs and active duties of life, the nature of these needs and duties must be considered in the kind of instruction offered. This plea for industrial education is simply that plea for a training which will the better fit people for the work in which they are engaged.

In his second article, entitled "Industrial Education a Necessity," in the July number of the Magazine; Mr. Hodge, after reference to the increasing number of workers who were simply attendants on a machine, who, if from any cause thrown out of that work, were wholly unfitted for any other form of skilled labor, proceeds to show by statistics the need for specific industrial training in the United States. He says:

NECESSITY OF INCREASING EDUCATIONAL FACILITIES.

The appalling necessity of extending educational facilities in industrial lines is seen from the following careful study made by the writer of the young men and their needs in the United States. Without going into detail, it is found that of the 13,000,000 young men in the United States between the ages of 16 and 35, only 5 in every 100 have been prepared, by education received at some kind of a school, for

their occupations; 95 have not. In Ohio, for example, than which no State stands higher in its professional training for teachers, or takes more interest in educational matters from the kindergarten to the university, or gives as much attention to the examination of both teacher and student, or possibly excepting one or two, has as many colleges, academies, and other school facilities, both public and private, per thousand inhabitants—in Ohio, from the school commissioner's report March, 1894, but one boy in every 518 succeeded in pursuing his course as far as through the high school, and but one girl in every 425 was similarly fortunate. But one boy in about 2,000 succeeds in finishing a college, university, or professional course. This fearful condition is due largely to the fact that six-sevenths of all our boys and young men have left school before the age of 13 years—before they arrived at any years of discretion, or realized what they were losing, and went to work in shops, offices, factories, etc., to help earn their livelihood. This partially accounts for the large body of men looking for work and who can do nothing well, though when questioned as to their ability, always reply that they can do anything.

* * * * *

It is rather interesting to note the coincidence between the above ratio of 5 to 95 of the young men prepared by education at school for their occupations, and the current statement among commercial business men, that "of 100 men who enter business only 5 leave it with as much or more money than was put into it."

DEMAND FOR SKILLED INDUSTRIAL WORKERS.

Another reason of necessity for the introduction of more practical life-preparing facilities not only in our public schools, but the extension of similar opportunities, under either religious or philanthropic auspices, and with both day and evening privileges, is seen from another equally startling fact. From a study of the subject, ascertaining the previous training of bodies of men engaged in different industries and manufactures, also following our graduates of colleges, universities, and professional schools into their daily vocations, it is found that of every 100 graduates of our grammar schools only obtain their livelihood by means of the professions and commercial business, while the remaining 92 obtain the same by means of their hands. The 8 are fitted for their wage earning capacities by their training obtained in the colleges, universities, and professional schools, while the 92, denied similar opportunities, are obliged in the great majority of cases and amid great embarrassments to fight their way for a livelihood by experiment and imitation of other workmen.

* * * * *

There are three times more opportunities for positions in this country for the skilled mechanic or the expert in any of the prominent trades than for the trained lawyer, physician, artist, musician, or the commercial graduate, yet in general the opportunities of the former for gaining through any kind of school privileges are estimated to be only about one-tenth the latter.

This unwisely distributed condition of educational privileges accounts very largely for the presence in great numbers of men skilled in the trades and industries who have come to us from Europe. Hon. Chauncey Depew is reported to have said that over 100,000 such skilled workmen come to the United States ever summer and return every winter.

CONTRAST BETWEEN AMERICAN AND EUROPEAN OPPORTUNITIES FOR TECHNICAL EDUCATION.

In some provinces of France and Germany there are ten times the opportunities for industrial education, especially in manual training and trade or apprentice school facilities, that exist here. As one result of this we find one boy in every 213 there in college, while here but one in about 2,000. As another result of the benefit of such extension of industrial and specialized instruction we see the reason for the supremacy of foreign workmen.

In the article in the October, (1895,) number of the Magazine, Mr Hodge, suggests to various classes of his readers how they may most readily obtain information concerning this new movement and how they may aid in its development.

He urges reference to books on the various topics; to Reports of the U. S. Bureau of Education, with personal visits to Manual Training Schools, Industrial Institutes and to Schools of Technology.

He suggests to persons of means, who desire to be of use to the community, that they shall follow, in their own immediate localities, the example set by Charles Pratt, Anthony Drexel, and Philip Armour, in founding, each in his own home City, the admirable Institutes, which in Brooklyn, Philadelphia and Chicago, offer such valuable facilities for the special education of the young. To citizens generally, he urges the promotion of the introduction of some form of Manual Training in all grades of the public schools; while, to those youth who must needs be self supporting, he urges self denial and frugality; in order that they may be able to avail themselves of these opportunities for industrial training which will prove so advantageous to them all through their lives.

Finally, in arguing that these new methods of education, instead of impairing, increase the value and efficiency of the former textbook training; He says:

INDUSTRIAL EDUCATION AN AID TO MENTAL DISCIPLINE.

Industrial education does not reduce the scope and efficiency of the education in the three R's. On the contrary, by making their acquisition easier, their influence upon the progress of true education will grow more powerful, and at a great saving of time and energy. The pupils, while having time for industrial training, will still learn more of the three R's than was learned before while the whole time of the pupil was spent on memory subjects, as has been proven by experience.

AN ENGLISH EXPERIMENT IN INDUSTRIAL TRAINING.

In an English school of six hundred pupils, half boys and half girls, industrial training was introduced into the course of study for the girls before it was given to the boys. The girls were put on half tuition; that is, the time of their book instruction was reduced from thirty-six to eighteen hours per week, and given on the three alternate days of their industrial training, the boys remaining at full school time of thirty-six hours per week, the course of study in memory subjects being the same as that formerly used for the girls. At the examination much surprise was manifested at finding that the girls were so much more mentally alert and in advance of the boys in book attainments. The same experiment was tried with the boys the following year, and after a time they, too, proved on examination to have regained their previous relative position, which was in advance of the girls. In this case the introduction of manual training and the reduction of the hours of study of the three R's by one-half, first raised the scholarship of the girls above that of the boys, and then again that of the boys above that of the girls.

Similar experiences prove the assertion that the introduction of industrial education into a school curriculum without increasing the hours of school attendance will intensify the capacity of pupils, make progress in book learning quicker and more thorough, and increase the energy and vivacity of mental powers.

In the article in the November, (1895) number of the magazine, Mr. Hodge, emphasizes the reciprocal relation between the brain and the hand; and urges that the new industrial methods, are not only not antagonistic to the old memory methods, but are complementary to them. He also argues that special attention to the manual training of children and youth, has been made necessary by the great changes in social surroundings resulting from the modern development of civilization; so that the present dwellers in towns, and cities, necessarily deprived of much of the old-time indirect training in varied industrial employments, are now in need of direct training in the simple elementary processes common to the mechanical industries.

On the latter points, he says:

There is no need of compelling every child to do every kind of human labor, provided, whatever he does, he learns to work rationally; that is, so the head and hand are kept continuously in cooperation. It seems indispensable, however, that he should learn something about those occupations which furnish the food and essential means of support for the race—farming and gardening—and also that he should

pursue a course of manual training which will acquaint him with the elements of the common trades, and, lastly, that he should devote his energies to some special line of life work. Whatever he does, the cooperation of the head and hand should be so thoroughly instilled as to secure its continuance through life. A hindrance will be met here in that the law of division of labor and modern industry have changed the circumstances and habits of life completely. Our parents in school were obliged to make their own pens out of quills; sew, trim, and rule their own copy and other exercise books; make and put covers on their texts; make their envelopes for letters; make boxes and numerous other useful articles, all of which are now manufactured so cheaply by machinery. In this way the children of the former generation obtained a good manual training; and to this day the children of the country, though not now engaged in making the above articles, have great opportunity for many forms of manual instruction utterly denied to the city students.

INDUSTRIAL ADVANTAGES OF COUNTRY CHILDREN.

The daily life of country children, with the experience of their parents, in the care and repair of the houses, barns, and fences and the endless variety of equipment; their acquaintance with the habits, use, and care of the different kinds of domestic animals; and, in short, the rare privilege of being an active part of the grandest all-around school for a child—that of a well-managed country home—these are what cause the students from the country to distance their city brothers and sisters in all that pertains to quickness of observation, accuracy of judgment, and strength of character. With the population flocking to the cities, this wholesome, healthful country training is lost; yet in many places in the cities the kindergarten and manual training are beginning to take its place. However, the opportunities in this direction are altogether too small. Were it not for these the human hand of coming generations would soon lose its cunning, the progressive development of the brain cease, and a retrograde evolution of the race begin. To avoid this calamity the privileges of industrial education—the kindergarten for children under ten, the manual training for youth under eighteen or twenty, and trade-school courses for persons above that age—must be accessible to all, especially the children of the laboring people.

IMPORTANCE OF MANUAL SKILL TO ALL WORKERS.

Three-fourths of all the workers of the United States are engaged in the manual occupations which are based on industrial and scientific principles. This great army of workers feels the loss of manual skill more intensely than any other body of people, because they live by the labor of the hand and suffer from the fact that in the proportion in which machines have rendered skilled hand work superfluous the ability of the hand of the laborer has decreased. The pitiable children of this great, earnest, true-hearted, deserving body of workers are obliged to work in shops and factories, performing a routine in operating some machine, a work destructive of harmonious development of the hand and brain. These children have as bright natural gifts, talents, and desires as others, and in many cases more sterling characters than their brothers and sisters who are favored with more opportunities.

The increasing number of evening schools now prevalent in a measure affords some means for the stronger of these children to gain the elements of an education, but in the mad rush and greed of corporations employing these children their work through the day has been pushed to such an extent that they are too weary at night to generally avail themselves of such educational opportunities. There is but one way to stop this terrible sacrifice of human life and happiness resulting from child labor in shops and factories, and that is by compulsory education of all the children of the people by a correct method. This method must turn out men not only prepared to do their duty, but men of conscience and character, qualified to determine upon and do the kind of work best suited to their natural abilities.

A unity educational system of manual training provides facilities for bringing about such a result, providing the masses of children needing its privileges can be accommodated. At present these opportunities are not in reach of the masses of children, either because the manual training schools are separate from the public school in so many places or because the children are at work in shops and factories. It is just the children of the laboring classes that need the education by the hand more than any other class of people.

NEED OF MANUAL TRAINING IN PUBLIC SCHOOLS.

If manual training is to help the people at large, it must be introduced into the public school and attendance enforced. A man obtaining his livelihood by means of his hand is much more in need of manual ability than of any knowledge of memory subjects of history, literature, or language, and this need must be supplied.

The papers by the Secretary of The International Committee from which the foregoing extracts have been taken, show the present attitude of the Associations towards the movement for the general diffusion of Industrial Training. The following paper was read by Cephas Brainerd, Esq., at the Convention of the Association of the two New England States of Massachusetts and Rhode Island, held in 1892, at Pittsfield, Massachusetts.

This paper, which treats of the general purpose of the Associations in carrying on their educational work, and is valuable for its comprehensive view and clear statements of the intent of these bodies, is also of interest as foreshadowing the coming movement for the addition, to the educational forces before employed, of evening classes of Industrial Training.

The references at the opening of the paper, both to the Polytechnic of London, founded by Mr. Quinton Hogg, for working men and apprentices, and to the Pratt Institute of Brooklyn, N. Y., with the statement of the very characteristic action of the late Charles Pratt, in respect to the Association, take added interest in view of the successful results already achieved.*

EDUCATIONAL WORK IN THE ASSOCIATIONS.†

The topic on which you have requested me to speak takes the form of a question, viz, "What ought to be the scope of our educational work?" The answer may not be found in the practice of the various Associations throughout the country. If the question were, "What is the present scope of our educational work?" the answer would be, that it embraces a very wide range of subjects, quite beyond the needs of the young men as grouped in our organizations and as presenting a field for our work. No doubt the discussion which is hereafter to take place in this convention will disclose what ought to be, and this partly from a consideration of the existing condition.

There is a practical uniformity in the declared objects of the Young Men's Christian Associations, viz, the improvement of the spiritual, mental, social, and physical condition of young men. These objects are named in the order of their importance as understood by those who participated in framing this statement. Some of you may remember that there was debate in the earlier days as to whether the word "physical" should have place in this declaration. The features of the plan of the association work represented by the words "mental, social, and physical" were incorporated in the general plan in subordination to the prime object represented by the word "spiritual;" the proposition being that young men fully equipped in mental, social, and physical attributes or qualities would, if these were consecrated to a Christian service, increase greatly their force and efficiency as religious men.

Classes for the instruction of young men in secular branches have been common in the Associations for many years. The early gatherings of young men in our rooms disclosed very soon the importance of furnishing those comparatively without money an opportunity in the evening for perfecting themselves in some branch of knowledge especially valuable along the lines of their daily calling. So it came to pass in one of our large cities that its first educational endowment came from a wealthy, experienced, and aged merchant who sought to provide for the maintenance of classes for instruction in penmanship and bookkeeping. This merchant

*Educational Work in the Associations: A Paper read at the Convention of Young Men's Christian Associations of Massachusetts and Rhode Island, at Pittsfield, 21st October, 1892. By Cephas Brainerd. New-York. The International Committee of Young Men's Christian Associations. 1893.

†The committee on the report of the executive committee made to the Pittsfield convention, presented, among other resolutions, the following:

"We note the omission from the report of any special reference to the educational department, but heartily approve the action of the committee in securing the presentation of that subject to the convention by the former chairman of our international committee. We recommend that this address be read and considered by the board of directors in every local association in the two States."

This resolution was adopted by the convention. The recommendation with which it closes, and numerous expressions kindred in character from other quarters, cause the present reprint.

had observed in the course of his long and eminent career that there were many young men passing in and out of employment in his great house who lacked precisely the knowledge which such classes would afford to secure permanent employment in the lines for which they were otherwise qualified, while they wanted, not so much the disposition to acquire that knowledge by evening study, as the means for doing it in the private institutions then existing.

INCREASED DEMAND FOR INSTRUCTION.

The recent discussions of the topic represented by the words "University Extension"* have no doubt greatly enhanced the desire among association men for an increase in each locality of the agencies for instruction. Beyond question these Associations furnish to-day the largest organized bodies for the development in a limited way of the idea of "University Extension"—at least, as I understand it—and also for that form of practical instruction useful in everyday life which is represented perhaps now in its best form abroad by the Polytechnic Christian Association of London, which you know was established by Quintin Hogg for the purpose of furnishing to workingmen and apprentices facilities for instruction and improvement which he considered the Young Men's Christian Association of London provided only for the clerk class.

THE PRATT INSTITUTE OF BROOKLYN, N. Y.

In our own country, so far as I am aware, the best institution of this character is the Pratt Institute in the city of Brooklyn, which embraces a very large range of educational facilities in the most practical form, from the work of the house joiner to that of the modeler from life. This institution possesses very great interest and value for the Association men of America. Its founder, Charles Pratt, now deceased, was an experienced and extremely successful merchant. When his position and fortune were assured he directed a very large part of his energies to the establishment of the school which now bears his name. Speaking at large, it is the outgrowth of his own experience and knowledge as respects the needs of the average people of our own country. Not long before his lamented death his attention was called to the Young Men's Christian Association as a field for the practical development, to a greater or less extent, of the ideas which lay at the foundation of his own institution. I betray no confidence in saying that he doubted very much the availability of the Associations for the useful development of his plans of practical education; that is, the education which would qualify the young men connected with them, whose training had been defective and whose opportunity for culture had been slight, for advancement in the line of their daily calling. He gave to the Associations in this regard the most careful study, and reached the conclusion that they did present a most ample and promising field; he announced that conclusion and directed that a generous contribution be made to the International Committee and also to the Association of his own city, having especially in view this particular feature of the association's work; and the checks were filled out for his signature. He died leaving them unsigned. His representatives carried out that primary intention, and the International Committee thereupon continued its careful study of the field and the preparation of plans for an educational system adapted to the Associations. The representatives of Mr. Pratt were deeply interested, and gladly cooperated with the Committee. The result was that they felt it to be a duty and a privilege to place the Committee in a financial position which would enable it to employ a Secretary for service in the Associations, with special reference to this feature of practical education. It is believed, as I understand, by the

*Mr. Secretary Douglas of the Philadelphia Association defines "University Extension" as—

"An effort to carry the opportunities and advantages of University instruction to the masses of the people; in other words, it does not seek to extend the range of University teaching or to increase the number of those who take residence in universities, but rather, from the universities as centers, to go forth taking the same teaching, class work, and examinations to groups of people in outside communities who can give only fragments of time to such studies.

"In connection with the Young Men's Christian Associations it means [he says] the addition to our ordinary class work of studies related to liberal education, the using of the University lectures and the University methods, the whole bearing the same relation of subordination to the higher purpose of our work that our educational work has always borne. We seek to provide a good physical basis for young men, to superimpose on that business and intellectual discipline and training, and to crown all with the mental and spiritual teachings."

Committee that a suitable man to undertake this work has been at last discovered, though months have been spent in finding him, and he is just about to enter upon the service.

THE MAIN PURPOSE OF THE Y. M. C. A. SET FORTH.

The associations are not, however, in the ordinary sense of the word, seminaries of learning; they do not seek for pupils merely; their classes and their educational facilities are for those who are attracted to them in the expectation of deriving advantages from a Christian society composed of young men. It is all very well for a young man to come to them because these educational advantages are offered; but he is expected to come understanding fully that these are not offered simply because they are educational, but because they are contributing features in the plan of the association's work, tending directly, when in the hands of proper teachers, to the accomplishment of their prime and chief object—the conversion of young men and their establishment in the Christian life.* Those who enter upon the work of the Associations surrounded by favorable social conditions, with adequate mental and scholastic equipment, do not need the opportunities proposed to be offered; these adopt and seek to apply in practice the teachings of Guizot, that "it is the work of civilization to raise up from time to time a greater number of men to take active part in the great events which agitate the society of which they are members. As civilization advances it reaches new classes of individuals and gives them a place in history. The different conditions of society thus tend not to confusion, but to arrangement under different forms and in different degrees in the superior region of society by which history is made." That is to say, those men in the associations who are imbued with the right spirit will be constantly engaged in the business of lifting up the classes below them, to the end that they may be qualified to perform a higher part in the "region of society by which history is made." But going beyond this, however, they are bound to recognize, and I believe they do as a body recognize, also, the fact that "the strength of the American character lies in its reverence for common life, in its belief that all common acts and offices are sacred." I use this word "sacred" in its largest sense, and applying it to every occupation, honest in itself, to which any human being may be called, no matter how exalted, no matter how obscure. This proposition lies at the foundation of every effort made in the Associations in the direction of education. It is all very well to say to a man if he is better educated he can earn more money, will never want for employment, be able to wear better clothing, and present while in the activity of that employment, so to speak, a more genteel appearance; but so long as human society continues this side of the millennium there will be professors in the colleges, bankers at their desks, lawyers in the courts, and merchants at their counters, and there will also be clerks, bookkeepers, farmers, mechanics, artisans, farm hands, shop boys, and sweepers of streets; and each of these in his place has a duty and a service to perform which contributes to the ennobling, enriching, and preservation of human society, which constitutes a part, and but a part, of the great whole which goes to make up the common life of the American citizen. The acts and the offices of each

*The following observations of Cardinal Newman are not unworthy of attention in this connection (Discussions and Arguments, pp. 274-275):

"Christianity, and nothing short of it, must be made the element and principle of all education. Where it has been laid as the first stone, and acknowledged as the governing spirit, it will take up into itself, assimilate, and give a character to literature and science. Where revealed truth has given the aim and direction to knowledge, knowledge of all kinds will minister to revealed truth. The evidences of religion, natural theology, metaphysics—or, again, poetry, history, and the classics—or physics and mathematics, may all be grafted into the mind of a Christian and give and take by the grafting. But if in education we begin with nature before grace, with evidences before faith, with science before conscience, with poetry before practice, we shall be doing much the same as if we were to indulge the appetites and passions and turn a deaf ear to the reason. In each case we misplace what in its place is a divine gift. If we attempt to effect a moral improvement by means of poetry, we shall but mature into a mawkish, frivolous, and fastidious sentimentalism; if by means of argument, into a dry, unamiable longheadedness; if by good society, into a polished outside, with hollowness within, in which vice has lost its grossness and perhaps increased its malignity; if by experimental science, into an uppish, supercilious temper, much inclined to scepticism. But reverse the order of things: put faith first, knowledge second; let the university minister to the church, and then classical poetry becomes the type of gospel truth, and physical science a comment on Genesis or Job, and Aristotle changes into Butler, and Arcesilaus into Berkeley."

in their several places are sacred in the sight of God, and will be and ought to be sacred in the sight of all true men and all true women. And the education which I advocate, as respects the Associations, is the education which will not only qualify those in the lowest stratum of human employment to change for another and higher grade of service, but also qualify them for more useful work in the field to which they were originally assigned by Providence. The measure of greatness in the sight of the Eternal is not necessarily the performance of a great act upon the stage of a great theater in the face of an applauding multitude; there is beyond question the same greatness of soul, the same spirit of self-sacrifice, the same consecration to duty, and the same looking for the final recompense of reward in the obscurest street sweeper who, at the risk of his life, stops the runaway horse, and yet, in spite of his heroic act, passes to his grave unknown. So that the underlying difficulty in respect of our educational work is in the fact that all men do not recognize the sacredness of the service to which they are called, whatever that service may be. There is much in a young man qualifying himself for a satisfactory performance of the service which is before him—I mean satisfactory to his employer and also satisfactory to himself because it is intelligently performed—for the reason that this qualifies him for some change of avocation, for a step higher in the grade of human employment. This is all very well in itself; but, beyond this, a prime topic for emphatic instruction, preliminary to every effort for a thoroughly practical education, is the dignity and sacredness of hard, honest labor. Herein is found an obstacle in our educational work.

HOW TO IMPROVE SPARE TIME EDUCATIONALLY.

There is another obstacle—a general indisposition to pursue a merely educational course of investigation. By this I mean an absence of the habit of industry, which is defined by good Isaac Barrow as “a serious and steady application of mind, joined with a vigorous exercise of our active faculties, in the prosecution of any reasonable, honest, and useful design in order to the accomplishment or attainment of some considerable good.” This general indisposition must be overcome, and the young man must be shown how to acquire knowledge, how to make use of the shreds and scraps of time which are innumerable in every young man's life, and which to the most of them are the merest deserts. Time is not given me for an exposition of methods by which this is to be accomplished. You are, or ought to be, full of suggestions for the accomplishment of this. Those of you who have fought your way from a condition of comparative ignorance to the possession of knowledge which qualifies you to associate with people in the higher grades of society know very well how that knowledge was acquired. Careful consideration or mere accident may have led you to an examination of some particular topic, and one step led you to another, and as you went on the field broadened ever and ever, until you soon found that the shreds and scraps of time became improved opportunities for increasing your stock of knowledge. You had a book with you pertinent to the subject in hand as you crossed the ferry, when riding in the cars, when waiting an appointment, when waiting for your meals, until by and by you looked back upon the ground traversed amazed at what had been accomplished in a collateral occupation while not one of the duties of everyday life had been neglected. This disposition is to be created and fostered; this obstacle is to be overcome.

Then we are met on the part of these young men by doubt as to the value of the knowledge they may acquire while they are continually engaged in a fatiguing employment which exacts more of physical than of intellectual force. They say, “Of what use is knowledge?” This question must be answered, and I am bound to assume that your answer will be prompt and adequate. One step higher in his present employment is the ambition of the young man, but he does not take that higher step without the acquisition of further knowledge bearing upon that employment. The man who earns \$2 a day as a blacksmith does not get \$3 without the acquisition of a real power which entitles him to the additional dollar; added to this promotion is a satisfaction to the man himself that he is in the possession of new knowledge as to the why and the wherefore of the things that cross his path in daily service. I remember very well seeing a practical blacksmith sharpening a stonecutter's chisel. After he had formed the point came the question of tempering the steel; he put the chisel into his forge, took it out, examined it, returned it; again took it out, scrutinized it carefully, put it into the water; withdrew it, looked at the color, thrust it in again; withdrew it, looked at it again, until finally there came upon it the satisfactory appearance; and then he cooled it completely. He could not tell me the “why and the wherefore” of all that. Would it not have been a nice thing to him if, with the knowledge that he had—practical in its character—he could have explained to me the processes through which that heated steel passed in reaching the color which indicated the precise temper for the carving of a statue?

The educational system in the Associations presents two aspects—first, that as to the general education which was spoken of as “University Extension.” Here I would aim at nothing more and nothing less than this: The creation of the habit of acquiring knowledge by reading and study while in the prosecution of the business of everyday life. This is promoted by practical lectures and also by the employment of the library.

PRACTICAL EDUCATIONAL TALKS SUGGESTED.

1. There is a vast difference between the ordinary lectures and the practical talks which I have in mind. I notice the circulars issued by the Associations as respects their courses of lectures sometimes bear the title of “Star Course,” sometimes “Entertainment Course,” or other words of like character. Now, these are all very well; they may exclude from attention other entertainments which have evil surroundings; but the educational talks are not likely to be as generally attractive as these, and the audiences will be somewhat smaller. In my judgment, in every town where an Association exists, educational lectures can be maintained at very small cost; in most cases the greatest cost will be for lights and advertisements. Let me illustrate: I had occasion to attend a convention in a charming little town very far from the great centers. In conversation with the President of the Association I urged these educational talks. He said in that remote place it was difficult to get them. I replied that I could furnish him with four lecturers at once in that place. He expressed some surprise and more doubt. I said to him, “There is Mr. —, one of the most competent of electricians, now a representative of one of the cable companies whose wires underlie the Atlantic. With how many talks, at once instructive and inspiring, do you think he could occupy the attention of your people upon topics connected with telegraphy and electricity? To do this he would require from time to time merely to arrange his thoughts out of his everyday stock of knowledge.” My friend acknowledged that there was one lecturer. I said, “There is Mr. —; he represents the meteorological system at this important point for two worlds, and has done this for years; he observes these signs and receives and communicates the conditions of the weather both East and West. How many evenings can he occupy without being obliged to put upon paper a single word upon this great subject?” Here, it was agreed, was a second lecturer. Again, “There is Mr. —, who has represented this Province in the Parliament of Canada for some years, who is familiar with great colonial enterprises, with your politics, with your legislation, with the methods and pursuits of your great men, and who has, no doubt, followed important causes on appeal to England and argued them there. He loves his town, and would be glad to instruct his fellow-citizens, and especially the young. How many evenings could he occupy without exhausting his knowledge or being obliged to refer to a single book?” My friend agreed that I had produced a third lecturer. I said, “I dined in a charming home to-night with one of your young men, engaged here in active and important business; he exhibited to me a most excellent collection of the best works of the first engravers, from an early period down to the present time. And, what is more, he displayed a knowledge of these treasures which I have rarely seen surpassed, and of the engravers, and of the very technique of their art. How many evenings can he occupy in instructing your people by the use of these specimens and out of his present stock of knowledge on that subject?” My friend agreed that I had furnished him with a fourth lecturer. I added, “If with only four days’ acquaintance with your home I can find four such men, how many can you find in the place of your birth and abode?” What was true of Sidney, Cape Breton, is true practically and substantially in respect of every place where an association exists. That class of lecturers—men talking in the common way about the things of their daily life—creates in the hearers, almost against their will, a disposition to acquire further knowledge; and such lecturers will suggest investigation and lines of reading and study, which will be pursued by those who have heard them.

SUGGESTIONS FOR OUTING CLUBS.

Take another method. In this town I notice that there exists what is called the “Agassiz Society.” This, of course, is addressed to those branches of knowledge, proficiency in which made the person whose name the society bears foremost among men. Let me illustrate the advantage of such a society in the Associations, an advantage demonstrated by the practical experience of the Association at Newburg, N. Y. Every outing club can be made an “Agassiz Society,” or a society kindred in character. Suppose the efforts of one of these outing clubs be addressed to the obtaining of knowledge in regard to your own local history and that of the surrounding towns. You may take in, if you please, Williamstown and its educational institutions. You may take in Stockbridge, with its history; or the

early history of a town like Deerfield. You visit historical localities in these towns and your clubs will thus become possessed of a vast store of knowledge valuable for every purpose of social life, useful for thought, and practical for the purposes of address; and you will create a love and admiration for home, which will also create a disposition to work for its advancement, for the improvement of its inhabitants, and for the beautifying of its hills and its valleys. A love will be created for those "kings and queens of homespun" who long ago laid the foundation for the culture and beauty of the towns in which you dwell, or the towns from which you may have come. In these visits you will not only acquire knowledge, but you will also obtain material for decorating your rooms, and these things so obtained will be instructive and valuable to the young men who visit them. From these excursions will also come numerous essays, giving an account of them. You will have "the box tortoise, illustrated by living specimens;" glacial action, illustrated by specimens of scratched rock brought home by the excursionists; "what the fossils teach us," illustrated by specimens which the excursionists have collected; the Stockbridge Indian, including the speech of the Stockbridge chief, which you know has a place in our readers as one of the best specimens of American eloquence; Deerfield and its ancient homes, and the Indian massacre, with its details and its localities; indeed a hundred things which time does not permit me now to specify.

DR. GILMAN'S PORTRAIT OF A LIBRARIAN.

2. Taking now the library, smaller or larger. There is no difficulty in any town where an Association exists in obtaining a large and valuable collection of books. That will greatly depend, however, on the skill and capacity of those who administer the library and upon their abilities to make it useful. I give you a portrait of a librarian and his duties as drawn by President Gilman, of Johns Hopkins:

"He should survey with an eagle's eye the vast field of human activity, and discern with prophetic instinct what books will soon be wanted. * * * So modern librarians, like ancient prophets, reveal what is hidden and interpret what is obscure, preferring usefulness to fame. What is true of advanced scholars is likewise true of beginners. Every young person, every merchant's clerk, every aspiring mechanic, every college student, every candidate for professional distinction, needs to be told what books to read and what books to eschew."

Do you say that you do not know such a man? I ask, Have you looked for one? Have you looked for a man who approximates to the portrait; and, if you have found him, did you give him adequate support in efforts to realize even his ideal? I think there has been in the Associations very great lack and failure in this regard. Association men do not attach that importance to the library as an educational force which it deserves. My own acquaintance with men who have risen by their own exertions satisfies me that a librarian who approaches in but a moderate degree the picture which Mr. Gilman has drawn, may be, yea, has been, a most potent factor in their progress. He indicates the book to be read, he directs and interests the attention of the young man to whom he commends it, and upon its return he indicates another and still another, while the field spreads wider and wider before the reader as he advances. Thus is created in the young man a habit or disposition for reading and study which would be cultivated in no other way.

I remember very well a young man whose attention was attracted very early in life to the specimens of Irish oratory which appeared in the declamation books in the high school he attended. Out of a reading of those extracts grew a desire to see the complete speeches from which they were taken. The first book that he bought with the money he saved was a collection of those complete discourses. From reading those he passed to other speeches bearing upon the same subjects; and the result was that he acquired a considerable knowledge of Irish and English history during the period in which those speeches were delivered, and indeed of the complex and difficult questions touching the relations of the two kingdoms. Years afterward, when that eminent historian, Mr. Froude, visited this country to deliver his lectures upon the Irish question, which receives so much attention, the young man found to his great surprise that he possessed a fund of information upon the topics on which the lecturer spoke which enabled him to appreciate them quite beyond the body of his hearers, as well as bring them to the test of the record. He was actually enabled to make some suggestions to that eminent person, which he noticed in subsequent discourses, and from whom he received a most charming letter of acknowledgment, which he exhibits as one of the most valuable and interesting autographs in his collection.

I have dwelt at considerable length, in view of the time assigned to this topic, upon these general matters, for the reason that my acquaintance with the work of the associations throughout the country has convinced me that there has been a serious neglect on the part of managers to emphasize them.

CLASSES FOR SPECIAL INSTRUCTION.

I come now to a few suggestions upon classes for special instruction. These must undoubtedly relate to the branches of practical knowledge which pertain to everyday affairs, and which are designed to increase the capacity and power of young men for the performance of the service in which they are engaged, or for advancement in it, or for other forms of service more beneficial to them and to the community in which they dwell.

1. Heretofore, in many cases, the Associations have, no doubt with little consideration, selected subjects for instruction with an inconsiderable reference to the needs of the young men composing the membership and the needs of the young men whom they seek to reach. For the double purpose of making the classes themselves effective and increasing the interest among business men in the general work of the Association, it is essential that those attempting to form them make a careful study of the field which they occupy. Efforts should be made to interest the employers of labor in the proposed work. After the plans for classes are partially formed, conferences should be had by those capable of making an exposition of these plans, and also of the work of the Association, with the heads of business enterprises. The whole plan of the Association should be exposed to them, its general value emphasized, and its particular value to their employees, as having a part in that plan, should be thoroughly illustrated. A disposition will then be created in the employers to encourage the attendance of their employees upon the opportunities which the Association affords. These gentlemen will make suggestions of great value to the committee having the classes in charge, in regard to the needs of the young men, the methods of instruction likely to be most useful, and the times when it can be best given. Out of all this gathered information will finally come the perfected plan and the selection of the subjects for instruction.

2. At the outset these classes should be few in number. I pause to emphasize this. Few classes well attended, with pupils thoroughly taught, will prove most potent instruments for the increase of your educational facilities and for the increase of attendance upon them. Besides, there is the element of economy. Numerous classes with paid teachers and few pupils make very inadequate returns for the time and money expended. If these selections are wisely made they will of course reach the largest body of men who need instruction. One would hardly think it necessary to establish a class in Spanish in one of your large manufacturing towns, and yet there may be conditions in New England where such a class would be desirable.

3. None but the most competent teachers attainable should be placed in charge of the classes. These should be men in thorough sympathy with the entire work of the Association; men who desire to make the classes contributory in every way to the promotion of the general interest, and to the prime end for which the associations are organized. I have known cases where instructors had no real sympathy with the work of the Association. They had, no doubt, an interest in their pupils as pupils; a desire to have their classes large and successful; but they had no interest whatever in the accomplishment of the real end for which the Associations are, or ought to be, all working. In dealing with their pupils they never adverted to other phases of the Association work. They took no pains to make their scholars feel that they were part of an organization designed to promote the highest—namely, the spiritual—welfare of young men. So far as their service was concerned the classes were no more to the Association than if they had gathered in another and distant building. This ought not to be; and it is a matter of great doubt whether, in any case, a class ought to be formed unless a teacher can be obtained who, to some extent at least, realizes the value of the suggestion which has here been made; and,

4. There are many cases in which these men can be obtained without compensation. There are plenty of men in the community who are perfectly willing—and I speak from my own knowledge in regard to some communities—*perfectly willing* to contribute their knowledge and experience for the benefit of young men, seeking no other reward than that which comes from their advancement in the particular line of knowledge which they have acquired. Take, for instance, my own profession. I remember very well, at an early day, that one of my own friends, a most accomplished and very much occupied lawyer, prepared an elaborate series of papers—popular, however, in their character—upon legal subjects connected with the everyday life of young men, mainly for the benefit of the Association with which he was connected, without any compensation whatever. Many men fully endowed with a capacity for teaching, and with special knowledge of particular topics, are so situated that they can not contribute money to the association cause, though they would gladly do so if they had it. But they have the knowledge, the time, and the disposition to make that knowledge available for others if the opportunity is accorded to them. These would esteem it a privilege—many of them

would esteem it a compliment—to have that opportunity offered to them. And I see no reason whatever why the Associations may not expect to find men as competent and as ready to give gratuitous instruction of the most thorough and practical character in the secular branches of knowledge, as they expect to find men, and do find men, who are ready and willing to give the most thorough and practical instruction without pay in the Bible classes. Most men, so far as my acquaintance goes, who have become possessed of special knowledge and have reached that period in life when they may be deemed to have established themselves in a particular avocation, are willing to place their knowledge at the service of young men. And especially is this true of Christian men who desire the elevation and advancement of those who are below them.

5. This instruction should be thoroughly practical. The classes are not for the display of theories, or merely for the presentation of interesting topics—for the exhibition of what may be called the romance of any trade. They should be designed to fit each young man who attends them for a higher grade of service in the everyday work of his peculiar avocation; to make him a better stenographer, a better penman, a better typewriter, a better bookkeeper, a better mechanic, a better artisan, a better draftsman, if you please, a better molder in a foundry, a better joiner or carpenter—in short, a better man in whatever business or trade he may be pursuing. So it is in Pratt Institute. The student goes from step to step, from the roughest attempt at wood carving to the most complete and perfect specimen, from the absurd caricature of a free-hand drawing to a thing of beauty, and under circumstances of instruction and discipline which enable him to put into practical activity in the shop with which he may be connected the skill which he has acquired.

6. It is not enough, however, to say that the instruction in the classes should be made in the highest degree practical. It is the business of the committees having these classes in charge to see to it that they take on this character. It will not be found enough to visit the classes occasionally and count the attendance. There must be constant communication with the teacher, a careful watching of the instruction, and, at the end, a thorough examination of the pupils. Of course, within reasonable limits, a regular attendance upon the classes by the students must be insisted upon, but this insistence must also take on a liberal character; it must be considerate of the fact that young men who are laboring for their daily bread are sometimes too weary and sometimes too much occupied with the demands of their employers to be constantly present in the classes; and so, while there is stringency there must also be latitude, but at the end, in examination, there must be the closest scrutiny, and this will have value not only to the pupils, but to the teachers as well.

7. In these things there should be no attempt to go fast. "Make haste slowly" is almost universally a good rule to work by in the Associations, and this is especially true of the classes. There must be time for growth; in the future, mindful of the experience of the Associations in the past with attempts in other lines, made in the best spirit and purpose, but which proved disastrous mainly because there was haste, let this error be avoided.

8. There should be no attempt whatever to make these societies seminaries of learning. Such an idea is foreign to the purposes of the Associations, and if attempted to be realized the attempt will result in disaster. These classes are simply and only for the purpose of helping young men who may be drawn into the Association, always with reference to its prime purpose, to advance in their particular line of everyday labor, and they are not to be addressed in their plan or their practice to the class of men who are able to pay the ordinary cost of these advantages. They are for those who can not under ordinary circumstances make adequate payment for this kind of instruction. They are for those who have only scraps of time for study; the bulk of whose days, and of every day, must necessarily be given to the earning of the money required for the ordinary expenses of living. These young men have only the evenings, and these we seek to have them employ for the purpose of education. I remember very well one young man who had acquired a knowledge of my own profession and was seeking an opportunity in an important office to begin, as he thought, a professional career, but with a compensation so moderate, however, that out of it he could not afford to pay anything for any sort of instruction. It turned out that he possessed all the qualities deemed essential to enable him to grasp this opportunity except one, and that was in the matter of his handwriting. The chief of the office said, "Mr. —, any man who takes this position must write a good hand." The young man replied, "If that is the only thing remaining, I will write a good hand." Fortunately he possessed the money which enabled him to employ a special teacher to instruct him in this accomplishment, and there he began his career. It seems to me that the classes in the Association should be such as to furnish those young men who have not that sum of money in their pockets to employ the agencies which will qualify them, in the one particular in which they are lacking, for seizing the opportunity for a life-

work when it shall be presented. These observations convey my general ideas as to the character of the classes.

9. As to literature and general knowledge I do not conceive these to be properly included within the range of branches of study which should be made the subject of special class instruction. I think they pertain wholly, as does the general idea of University Extension, to the classes of lectures which I specified at the outset, to the work of the librarian and his assistants, coupled with the use of the library, and to the topics for reading, which should be suggested by the lecturers themselves and distributed in printed or typewritten form to the attendants upon the lectures. So, too, the librarian and his assistants will prepare, from time to time, suggestions and lists of books bearing upon particular topics; and especially should this be true of the current additions to the library.

REFERENCE TO LECTURES BY FREDERICK DENISON MAURICE.

This whole general subject has been covered by the discussions of others which are accessible to all. Indeed, that charming book by Frederick Denison Maurice, entitled "Learning and Working," being the course of lectures he delivered in 1854 to select audiences in one of the most fashionable parts of London, embraces substantially all that need be said by way of general argument or statement in regard to this subject. These lectures, as many of you know, were delivered preliminarily to the actual establishment of the Workingmen's College in London, and were designed to secure the favor and cooperation of the important, the wealthy, and exalted in the promotion of that great enterprise, which had the support of men like Mr. Ruskin, Charles Kingsley, Thomas Hughes, and others. And this book I would commend to your reading as giving a charm to this whole subject beyond any power of mine to describe. Others have followed in the wake of Maurice, but none have surpassed him in ardor, in foresight, or in persistent devotion to the idea which he is seeking to enforce.

THE MOVEMENT FOR OPENING OF EDUCATIONAL CLASSES.

Educational classes have from the outset been favorites with many of those most active in the work of the Associations. It is true no considerable progress has yet been made. There has been no continuous effort represented by the International Committee or by the State Committees to guide and promote this department of our general work. The attempts at classes which have been made all over the country are but indications of the faith which men have in them, of the need which exists for them, and of the expectations which are indulged in regard to them. There has as yet been little of realization. I can not but believe that the discussion now going on, with the thought that is given to this matter, with the attention that it is receiving in our conventions and in our local gatherings, and with the support and guidance which I trust it will receive not only from the State Committees, but from the International Committee and its subcommittee having these matters in charge, and from the secretary who represents it, will secure for the associations at no distant day the highest, the best, the largest force of practical education for the needy young men who frequent, or can be induced to frequent, our numerous and rapidly increasing rooms. I believe that there is no Association in the country which can not make very large contributions to the general progress in this regard. And I think it is probable that States like your own, filled with manufacturing centers, larger or smaller, crowded with operatives, will be found to present the best fields for the development of these educational plans, and will really make the largest contribution, proportionately, to the education of young men.

The following extracts are from a pamphlet of 28 pages entitled "Educational Class Work in the Young Men's Christian Association (No. 656)" issued in 1893.

This summary of the educational purposes and methods of these Associations, is arranged by Mr. George B. Hodge, Secretary of the Educational Department.

The opening arguments for such opportunities as these educational classes offer are thus stated:

EDUCATIONAL CLASS WORK IN THE YOUNG MEN'S CHRISTIAN ASSOCIATIONS.*

The following outlines of plans and methods regarding educational classes are gathered from various sources, many having been worked out in practical experience. They are suggestive only, and are given with the thought of helping in the

* See Association Hand Book, chapter 24, Section C.

organization of new work and leading to greater uniformity and efficiency in the work as a whole. It is fully recognized that each Association must be governed largely by the circumstances of its own field.

I.—REASONS FOR EDUCATIONAL CLASS WORK IN THE ASSOCIATIONS.

1. The Associations seek the intellectual welfare of young men. The practical result of the work is to help young men to help themselves.

2. Every form of study in some way becomes helpful in business pursuits. Many young men will, through this means, find their "bent" and be thus led into a congenial and successful life work.

3. A technical training of the eye to see, the hand to do, the mind to think, and the will to execute is peculiarly essential in this industrial age—an age of machines and electricity—when there is everywhere a demand for skilled labor.

4. Increased knowledge gives a broader outlook and added power for both usefulness and enjoyment in life.

5. The necessity for self-support drives many of the brightest and best boys into business at an early age; to others no adequate facilities, especially in technical training, have been offered.

NOTE.—Statistics indicate that six-sevenths of the youth leave school before the age of 14; 1 in 31 of the remainder continues till the age of 18. That is, of 700 youth 600 begin work before they are 14, and 3 go to school till they are 18. Fully 95 per cent leave school before they are old enough to know what is best for them, and enter the trades, factories, and offices in our cities.

But 1 person in 10 finishes a primary education; but 1 in 120 a high school education; and but 1 in 1,500 a university or technical course of instruction.

In an average city of 75,000 population but 1 boy in 300 completes the course in the public schools. The large proportion of boys leave the high school at about 16 years—just the age when they may be admitted to the evening classes of the Young Men's Christian Association.

6. The Associations are able to afford the desired facilities at the time needed, at moderate cost, and often when they can be had in no other way.

7. With its open building, varied work, and especially its social atmosphere, the association is able, as no other organization, to render its educational facilities attractive as well as practical.

8. Many are brought into touch with the all-round work of the Association through this department that could be reached in no other way.

9. Many years of experiment and experience have proved the general helpfulness of the work.

10. In answer to inquiries, a few reasons are given why young men should avail themselves of the opportunities offered:

(1) Increase in salary usually follows increase in efficiency.

(2) Promotion in position and business follows the making of one's self *valuable*, if not *invaluable*, to his employer.

(3) The best way to secure promotion is promptly to prove one's self larger than the position he occupies.

(4) Earnest work in one or more of the branches offered along one's line of business will aid the young man in the promotion sought.

(5) The only way to *win* found by men is to work. Begin at the bottom and climb up. Whatever helps young men to reach the top is important. To know some business or trade thoroughly is an essential to success.

(6) To learn these things during their leisure hours is the desire of many young men, and the association offers the facilities attractively, thoroughly, and practically that will help young men to *win*.

Three or four pages of testimonials to the practical value of this training, from both employers and former students; with several additional pages of practical suggestions for the organizing and managing classes in the Associations, are omitted here. Under the general head of "Methods" occur the following suggestions for the practical work of teaching drawing:

TEACHER AND STUDENT.

(1) In outlining a lesson in drawing or in any industrial or shop work, it is considered better to have the teacher give a blackboard description of the lesson with its details before the whole class, even if blue prints are furnished the individual students.

(2) To gain an intelligent knowledge of what is done in Association educational work uniformity in records and reports is very desirable.

(3) Talks on habits of study, how to secure the most from a given subject, etc., will be helpful, especially at the beginning of the year; and friendly chats and suggestive hints should intersperse the entire work.

(4) For the average student taking drawing, mathematics, or science and shop work, half the time should be spent on the drawing, modeling, and supplemental problems in physics and mechanics, one-fourth on science or mathematical work, and one-fourth on shop work with tools or in the laboratory.

(5) The student in shop work should be encouraged to make his own working drawings for the articles he constructs in wood or iron as far as such practice continues helpful.

(6) A student should not attempt too much; take few subjects and make thorough work.

(7) Time should be taken for the satisfactory preparation of every lesson. Students should be encouraged to use the library and study rooms of the Association and feel that the secretary, the instructors, and the committeemen are willing to give them every possible assistance.

(8) Most students will find regular exercise in the gymnasium a help to them in their study and class work. The physical director may give them special hand and arm work that will aid them in the use of tools. (See Association Hand Book, pages 300, 309.)

(9) Text-books, paper, pencils, and other supplies for the classes may by special arrangement be furnished at the Association rooms and at a liberal discount.

The pages treating of Methods of Training, and showing the courses in outline, with a summary of the necessary equipments for elementary carpentry and forging, follow here.

INDUSTRIAL CLASS WORK.

1. The latest development in the educational work of the Associations is the industrial and technical. The student will need, first, a training in the basic sciences of the trades and industries, viz, drawing, mathematics, physics, and chemistry, their subdivisions and applications. Next, he must secure in the fewest number of subjects possible, and by such laboratory, shop work, and other practical means as shall be necessary, the thorough training of head and hand that will develop the ability to think correctly and do for himself along some chosen line of life work, thus making him worth more per day to himself and his employer.

The most important subject to the largest number of young men engaged in mechanical or industrial pursuits is drawing, especially if a practical course is given, supplemented with applications of mathematics, mechanics, and physics.

The times demand men able to put an idea into a sketch or drawing—"the language of construction and the medium through which men execute."

2. Reasons why it is desirable to introduce this special line of work are:

(1) As a vital factor in education such facilities enable young men in less time to be self-reliant, and to think logically, accurately, and with judgment in some practical line of life work.

(2) Because this is an age of industrial pursuits and the demand for skilled and intelligent labor is greater than the supply.

(3) Because the young men engaged in such pursuits need to be more largely reached by the Associations.

(4) Because of the general results of such work; (a) an increased attendance at the classes; (b) a wholesome intellectual development; (c) the ability to grasp and judge readily of new ideas; (d) the elevation of unintelligent labor to a position requiring and rewarding cultivation and skill; (e) an enlarged field and choice of occupations; (f) added material success for individual and community; (g) a cultivation of the habit of neatness, accuracy, and dispatch, of systematic work, and of laying definite plans.

3. Juniors: It will often be possible to introduce elementary carpentry and its collateral drawing into the junior department, at least in cities where such work is not already pursued by the juniors in the public schools. Such a class could meet two or more times per week, from 4.30 to 6 p. m., thus extending the class work and not interfering with the regular evening classes in the same subjects. The sessions of the London Polytechnic extend from 5 to 10 p. m., thus giving opportunity for a number of consecutive subjects per day. The time may not be far distant when the associations will conduct day classes in a number of subjects.

OUTLINES.

For obvious reasons, expressed elsewhere, and in answer to inquiries, the following courses are outlined, together with the necessary equipment and expense :

I. DRAWING.

The following arrangement is suggested for courses of study in free-hand, architectural, and mechanical drawing. In some places it may be found profitable and economical to require all students to take a preparatory course of study in free-hand drawing; this course of study to give considerable practice in free-hand and to cover the elements of construction, representation, and decoration—that is, of simple working drawings, pictorial drawing, and decorative drawing.

1. *Preparatory course*.—Free-hand: Geometric solids and combinations, front, top, and side views with measurements, simple sections, objects revolving upon one and two axes. Appearance of objects as wholes, cylindrical and rectangular; foreshortening of horizontal and vertical faces, convergence of lines to one and two vanishing points, simple sketches of combinations of objects, outline drawing from casts. Study of simple ornament—geometric and conventionalized—illustrating symmetry, repetition, balance, proportion, adaptation to space and purpose.

Instrumental: Simple working drawings of common objects, simple combinations, geometric problems, simple surface developments, lettering.

2. *Mechanical drawing*.—First year: Working drawings from machine details, surface developments and intersection of simple solids, screws, bolts, nuts, pulleys, couplings, pillow block and hanger.

Second year: Belting, cams, gearing, crank, strap end, eccentric, slide valve analysis, assembly drawings.

3. *Architectural drawing*.—First year: Working drawings of common objects and simple combinations, intersection of simple solids, sections through door frame, window frame, wall, floor, and cornice of frame house; plans and elevations of frame house, plans and elevations of brick or stone house.

Second year: Designs for first and second floor plans of frame, brick, or stone house from suggested outlines, together with elevations of same, exterior and interior details, problems in instrumental perspective, isometric projection, elements of classic orders of architecture.

4. *Free-hand drawing*.—First year: Cast drawing in outline and light and shade, free-hand perspective, pen and pencil sketching, elements of decorative design.

Second year: Cast drawing, sketching, modeling, applied design for fresco work, wall papers, ornamental ironwork and interior decoration.

NOTE.—All should complete the work of the “preparatory course” before beginning the work of the special courses outlined. It is important that free-hand work find more or less time in each year of the mechanical and architectural classes, as in making working drawings of objects or parts of machines, or the floor plans of a house from a free-hand sketch of the same.

NOTE.—The following table of standard lines, as used in many technical schools and largely in practice, is recommended for working drawings:

Outline, edges, etc. (full line),	_____
Invisible lines (long dash),	_____
Connecting lines (short dash),	- - - - -
Center lines (long and short dash),	_____
Dimension lines (broken lines),	<— — — — 2' 4" — — —>

II. INDUSTRIAL MATHEMATICS.

Arithmetic.—Fundamental operations, fractions, denominate numbers, percentage, interest.

Algebra.—Principles of factoring, simple and quadratic equations, involution, evolution.

Geometry.—Elementary plane geometry, mensuration, the formulas for elementary mechanics and their numerous applications, higher algebra and trigonometry.

III. SHOP WORK.

Although but recently introduced in the Associations, the success already attained warrants the extended use of this means as one of the most practical employed.

Pupils should pursue a course of drawing in connection with their work in the shop, as far as practicable making their own working drawings of each article they construct.

1. *Bench work in wood, or elementary carpentry*.—First year—Technical: Lectures and recitations on the character of cutting edges for woods; the care and adjustment of wood-working tools; the nature, shrinkage, and warping of woods,

and the form, adaptation, and relative strength of joints. Exercises in sawing, planing, chiseling, rabbeting, plowing, gluing, mortising, tenoning, dove tailing, framing, paneling, and other work involving the common carpentry tools.

Second year: Construction work, e. g., small house, framed and inclosed, including doors, windows, shutters, and finishing.

2. *Wood turning*.—Technical: Talks on foot and power lathes and their attachments, their use and care. Exercises in plain and ornamental turning. Cylinders, grooves, beads, sphere, ogee curves, different forms of vases, handles, etc.

3. *Pattern making, molding, and casting*.—Technical: Talks on machines used, including circular, band, and scroll saws and planers. Methods of pattern making, molding and casting. Exercises in pattern making, including solid, split, and built-up patterns and core boxes.

4. *Forging of iron and steel*.—Technical: Talks on the composition and management of the iron and steel in forging, annealing, hardening, tempering, etc. Processes of making iron and steel. Exercises: Management of the fire; heating, bending, drawing, upsetting, welding, annealing, and casehardening for work in iron; also the making and tempering of punches, drills, chisels, gravers, machine cutting tools, and springs in steel.

5. *Vise work in iron*.—Technical: Surface preparation; use of tools in filing and polishing. Exercises: Work in surface chipping, key setting, surface filing, squaring, fitting, round filing, sawing, scraping, and polishing.

The castings made by pupils at the foundry, or those bought in the rough for the class to finish and put together, make very profitable and practical exercises.

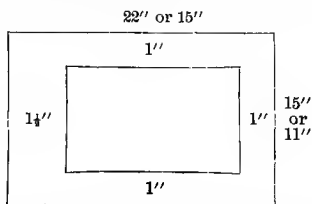
EQUIPMENT.

1. *Drawing*.—Desks should be substantial yet portable. The adjustable desk for a single pupil combines many desirable features, and is comparatively inexpensive. The common four-legged table is also used.

Drawing paper: There are many kinds of excellent paper—the Whatman, Peermless, Eggshell, German, American, and other brands. These can be procured in sheets, which are preferable to the roll.

That our drawings may be uniform it is recommended that the sizes be as follows: First year work, $\frac{1}{4}$ Imperial, 11" x 15"; second year work, $\frac{1}{4}$ Imperial, 15" x 22"; third year work, $\frac{1}{4}$ Imperial, 15" x 22", or full Imperial, 22" x 30".

Each plate, for purposes of binding, if desired, should have a margin of 1" on all sides except the left, which margin should be $1\frac{1}{2}$ ", as per diagram:



For many reasons it is desirable to have the students make blue prints of much of their work, especially the regular course drawings and exhibitable plates.

2. *Bench work in wood, or elementary carpentry*.—A good set of tools costs from \$8 to \$12. The students, with the teacher's aid, may make their own benches.

For a class of twelve, one full set of tools (set No. 1) will be sufficient, if in addition each bench or person is supplied with a small number of the most commonly used tools (set No. 2).

Set No. 1.

Bevel 6".
 Bit brace.
 Bits, auger, $\frac{1}{4}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", 1",
 Bits, drill, $\frac{5}{16}$ ", $\frac{7}{16}$ ".
 Chisels, firmer, $\frac{1}{8}$ ", $\frac{1}{4}$ ", $\frac{1}{2}$ ", 1".
 Dividers.
 Gauge.
 Gouge, $\frac{1}{2}$ " inside ground.
 Gouge, $\frac{3}{4}$ " outside ground.
 Hammer, claw.
 Hammer, pein.
 Mallet.
 Oil can.
 Oilstone.

Lead pencils.
 Plane, Bailey iron, smooth, 8".
 Plane, Bailey iron, block, 6".
 Pliers.
 Rule, 2'.
 Saw, 16" panel rip.
 Saw, 16" cut-off.
 Saw, 10" back.
 Saw block.
 Screwdriver.
 Square, framing.
 Trisquare, 8".

Set No. 2.

Chisels, firmer, $\frac{1}{2}$ ", 1".

Hammer, claw.

Plane, Bailey iron, smooth, 8".

Rule, 2'.

Saw, 16" cut-off.

Saw, 10" back.

Saw block.

Trisquare.

Thirty pupils, in three sections of ten each, can be provided with tools and equipment for from \$3 to \$4 each. The association should own the tools.

A case of drawers to hold tools, work, aprons, etc., can be made by the class.

3. *Wood turning*.—A good 9" swing lathe with head and tail centers, screw face plate 4' in diameter, and plain face plate 6' in diameter, with 5" and 10" rests, costs from \$50 to \$60.

The tools cost from \$4 to \$8, and consist of 1" gouge, ground straight across the edge, for roughing; $\frac{3}{4}$ " gouge, round end; $\frac{3}{8}$ " gouge, round end; $\frac{3}{8}$ " chisel, skew edge; 1" chisel, skew edge; $\frac{3}{4}$ " chisel, round edge; $\frac{1}{2}$ " chisel, straight edge; 10" calipers; parting tool, $\frac{1}{4}$ "; 2' rule; oilstone and slip stone; shrink rule $\frac{1}{4}$ " to 1".

4. *Forging*.—A small portable hand forge costs from \$10 to \$20; an anvil from \$8 to \$12.

The set of tools costs from \$6 to \$10, and comprises hammers, fire-shovel, 12" steel square; tongs, with jaws for holding various shapes of iron; hot and cold chisels, swages, fullers, punches, flatters, bolt-heading tools, set hammer, heading tools, water and coal box.

Some of these tools can be made by the students; such is the experience of at least one association.

The next year, 1894, Secretary Hodge, issued an illustrated little pamphlet of 24 pages, entitled: "Outline Courses in Class Work, Practical Suggestions and Graphic Illustrations" (No. 665). Pertinent quotations, from leading authors, relating to the importance and value of education in its application to the daily needs and affairs of life, are freely scattered over the pages. A frontispiece of a student's design for a Gothic church building, with several photographic views of class rooms full of busy students, comprise the "illustrations."

The preceding pamphlet (No. 656), the one just quoted here, is referred to for ampler suggestions.

The following passage on the value of Art Knowledge and the worth of an intelligent appreciation of Art, is all that is particularly related to the present Report.

THE VALUE AND IMPORTANCE OF ART KNOWLEDGE.

ART.

Without mingling of heart passion with hand power, no art is possible. The highest art unites both in their intense degrees; the action of the hand at its finest, with that of the heart at its fullest.—*Ruskin*.

It is desirable to use all possible means for developing in the minds and lives of young men an appreciation of art in its broadest form.

Everything that gives a higher moral instinct, a nobler aim in life, and a more honest regard for what is good and true is of incalculable value. To cultivate the artistic sense is to multiply powers of usefulness.

Visits to good art galleries and the study of the principles involved in the works of beauty and true worth are very desirable. Art exhibitions in the Association home and efforts to make this home the repository of art objects, both industrial and fine, are strongly urged. Several Associations have made encouraging progress in this direction.

We need artisans. There are daily coming to our shores skilled hands to teach our young men how to work in wood, iron, stone, and designs for carpets, wall papers, textiles, and fabrics of all kinds, to say nothing of work in gold, silver, and other materials. A high tariff on art will not make a nation of skilled mechanics, but plentiful technical facilities may.

These opportunities for study in industrial and art subjects offered by the Associations aim to help the clerk, student, laborer, apprentice, or journeyman to a practical working knowledge of science and the useful arts and their application to daily life. They supplement by theory and practice the daily work of the learner, thus form-

ing the best type of institution for the development of artistic and technical instruction. It does not interfere with apprenticeship in the shop, but supplements it, and gives without loss of time most helpful instruction.

The moral discipline and practical character of the instruction instead of discouraging the student with his daily occupation, lends to it new attractions and makes it more dignified and productive.

The course of instruction may well touch on all the principal industries of a city. In large industrial centers care may well be taken to specialize the instruction, as has been successfully done recently in several instances.

In some provinces of France and Germany there are ten times the number of industrial and technical schools there are in the United States. This in a measure accounts for the amount, value, and prominence of skilled labor from those lands.

The great need of such facilities here and the adaptation of our educational work to supply the need in the case of many thousands of young men affiliated with or within easy reach of our associations opens before us a very great opportunity for usefulness.

Unskilled labor is a serious flaw in our national life.

The following statistics, showing the far reaching influence exerted by the Young Men's Christian Associations and the large and increasing attendance upon their educational classes, are taken from the Annual Report of the Educational Department for 1895. (No. 680). This is a pamphlet of 24 pages, with four pages of illustrations showing working rooms fitted for working in wood and in iron.

EDUCATIONAL DEPARTMENT.

Committee.—Frederic B. Pratt, *Chairman*; Frederick B. Schenck, Edwin L. Shuey; George B. Hodge, *Secretary*.

Organization among workers is a sure sign of intelligence.

Agencies.—1, reading rooms; 2, libraries; 3, literary societies; 4, lectures and practical talks; 5, evening classes, (a) commercial subjects, (b) industrial subjects, (c) scientific subjects, (d) language subjects, (e) political subjects, (f) sociological subjects, (g) miscellaneous subjects.

Objects.—To awaken, increase, and sustain an interest in the intellectual development of young men.

To study the educational needs of young men along commercial, industrial, and other practical lines, and the methods of successfully supplying them.

To keep in touch with the best educational movements of the day, and cooperate in introducing their adaptable features into the associations.

To gather and circulate statistical and other helpful information regarding the educational work of the local associations, promote a uniform adoption of successful methods, and give needed supervision.

SUMMARY OF THE EDUCATIONAL WORK OF THE NORTH AMERICAN ASSOCIATIONS FOR THE SCHOOL YEAR JULY 1, 1894, TO JULY 1, 1895.

[The figures in parentheses are for the school year 1893-94.]

886 (843) Associations, exclusive of college and Indian associations, are in existence.

840 (789) report reading rooms.

240 (176) (from special educational reports) report 14,072 (10,451) periodicals at an expense of \$22,435 (\$16,400). Of these, 1,600 (900) are technical and devoted to the trades and industries.

654 (638) report libraries with 495,322 (476,572) volumes.

2,417 (791) books are reported drawn per day from 197 (129) libraries.

230 (190) report literary societies with a total average attendance of 5,200 (4,506).

460 (568) report 3,760 (4,795) lectures and practical talks.

349 (304) are known to have conducted evening class work, and 336 (294) of them report 22,800 (20,253) different students.

SPECIAL REPORTS.

Associations reporting evening classes were asked for additional information concerning this feature of their educational work.

Of the 336 (304) thus invited 260 (184) have responded.

90 (86) report deposit fee for evening classes; a few with one fee for all classes, others an extra fee for each class, and all but five with successful results.

225 (175) report 955 (708) teachers, of whom 626 (475) are paid a salary of \$1.25 per hour.

210 (140) report \$50,960 (\$39,665) as the total expense of their evening class work, an average of \$2.60 (\$2.43) per student belonging.

79 (60) report the total value of their class-work equipment as \$16,780 (\$8,103).

241 (180) report in the evening classes a total attendance of 428,200 (328,985); 29,700 (20,731) sessions, with 14,374 (11,767) as total average attendance; 73 (72) as the per cent of attendance.

1,753 (1,672) certificates were granted for successful completion of prescribed work in single subjects.

180 (152) Associations report an average of $1\frac{1}{2}$ ($1\frac{3}{8}$) class sessions per week, and 21 (21) weeks per school year.

Students classified as to occupation.

Of the 22,500 (20,253) different men in evening classes, 12,600 (8,526) are reported classified as follows: 16 (19) per cent, office men; 15 (15) per cent, students; 20 (23) per cent, clerks; 32 (26) per cent, mechanics; 17 (17) per cent, general tradesmen.

Students classified as to subjects pursued, expense, and per cent of attendance.

	Average expense per student belonging.	Per cent of attendance.
Of the 27,060 (20,253) enrolled students—		
12,345 (9,286), or 45 per cent, are in commercial subjects	\$1.50 (\$2.00)	73 (73)
572 (136), or 2 per cent, are in political subjects	1.40 (2.06)	78 (81)
3,975 (3,008), or 14 per cent, are in industrial subjects	2.80 (2.48)	74 (74)
2,310 (1,728), or 9 per cent, are in science	2.15 (2.58)	71 (72)
4,398 (3,138), or 18 per cent, are in language	2.10 (1.89)	73 (71)
3,460 (2,409), or 12 per cent, are miscellaneous	1.40 (2.62)	74 (72)

SUMMARY FOR THE SCHOOL YEAR JULY 1, 1895, TO JULY 1, 1896.

[The figures in parentheses are for the school year 1894-95.]

925 (886) Associations, exclusive of college and Indian associations, are in existence.

799 (840) report reading rooms.

248 (240) (from special educational reports) report 15,397 (14,072) periodicals at an expense of \$21,680 (\$22,435). Of these, 2,031 (1,600) are technical and devoted to the trades and industries.

670 (654) report Libraries with 479,563 (495,392) volumes.

946 (1,193) books (from special educational reports) are reported drawn per day from 108 (102) associations.

187 (188) report Literary Societies with a total average attendance of 5,023 (4,435).

761 (568) report 5,929 (5,062) lectures.

355 (349) are known to have conducted Evening Class work, and 346 (336) of them report 25,886 (22,800) different students.

SPECIAL REPORTS.

Associations reporting Evening Classes were asked for additional information concerning this feature of their work.

Of the 346 (336) thus urged 248 (240) have responded.

215 (214) report 1,030 (955) teachers, of whom 776 (626) are paid a salary of \$1.23 (\$1.25) per hour.

174 (161) report \$63,475 (\$50,960) as the total expense of their evening class work, an average of \$2.82 (\$2.60) per student belonging.

121 (79) report the total value of their class-work equipment as \$31,847 (\$16,780).

248 (235) report in the Evening Classes a total attendance of 511,800 (428,000); 36,082 (27,700) sessions with 16,297 (14,374) as the total average attendance, and 74 (73) as the per cent of attendance.

2,630 (1,753) certificates were granted by local associations for successful completion of prescribed work in single subjects.

11 certificates were granted by the international committee, in 2 subjects to students in 5 Associations who had successfully completed the requirements of the first international examinations.

155 (137) Associations report an average of 1.9 (1.8) class sessions per week, and 20 (21) weeks per year.

Students classified as to occupation.

Of the 25,886 (22,500) different men in Evening Classes, 16,888 (12,600) are reported classified as follows: 17 (16) per cent, office men; 11 (15) per cent, students; 23 (20) per cent, clerks; 28 (32) per cent, mechanics; 21 (17) per cent, general tradesmen.

Students classified as to subjects pursued, expense, and per cent of attendance.

	Average expense per student belonging.	Per cent of attendance.
Of the 29,888 (27,060) enrolled students—		
14,721 (12,345), or 55 (45) per cent, are in Commercial Subjects	\$2.70 (\$1.50)	75 (73)
535 (572), or 2 (2) per cent, are in Political Subjects	2.60 (1.40)	79 (78)
4,253 (3,975), or 16 (14) per cent, are in Industrial Subjects	3.80 (2.80)	77 (74)
2,740 (2,310), or 10 (9) per cent, are in Science	2.95 (2.15)	77 (71)
4,280 (4,398), or 17 (18) per cent, are in Language	3.65 (2.10)	77 (73)
3,731 (3,460), or 12 (12) per cent are in Miscellaneous	2.40 (1.40)	75 (74)

The following additional statement, in which the statistics are condensed and the increase over the previous year shown, was sent out in the summer of 1896, with the "Prospectus" containing the outline courses of study suggested for the evening classes during the ensuing year:

Educational summary for 1896 and its comparison with that for 1895.

If you are interested in young men you will be glad to see this summary and to note the encouraging and substantial growth in the Association educational work and in the number of men helped to help themselves. The increased value received by these men is seen in the greater financial energy given the educational work, as shown in larger appropriations and the larger number of paid teachers; the growth of elements giving permanency to the work is seen in the greatly increased equipment and the larger endowment; the growing appreciation of the value of the work by young men is seen in the number of students helped, the increased average attendance, and especially in the extra tuition fees paid by the students. It is also seen from the occupations represented that all bodies of men are helped.

	1894-95.	1895-96.	Increase 1896 over 1895.
			<i>Per cent.</i>
Number of students reached and helped	22,800	25,800	13
Total average attendance	14,374	16,297	13
Per cent of attendance	73	74	1
Total number of teachers	955	1,030	7
Number of teachers paid	626	778	19
Amount invested in equipment	\$16,777	\$31,847	90
Total expenses	\$50,953	\$63,475	24
Consisting of—			
Instruction	\$40,150	\$48,819	21
Supplies	\$6,803	\$8,482	24
Supervision	\$4,000	\$6,174	50
The expenses were provided for by—			
Endowment	\$3,000	\$4,215	40
Appropriation	\$41,953	\$50,303	20
Extra tuition fees	\$6,000	\$11,629	92
Total expense per average student belonging	\$2.60	\$2.82	—
The occupations of the students are—			
Office men	1,997	2,812	40
Students	1,781	1,844	4
Clerks	2,477	3,912	57
Mechanics	4,180	4,721	13
General tradesmen	2,164	3,599	20

Further information cheerfully given.

Digitized by Microsoft® GEO. B. HODGE, Secretary.

The value of exhibitions for promoting rapid dissemination of a knowledge of new movements throughout the community, which have been so impressed upon the American people by the object lessons of the Centennial and Columbian Expositions, has been fully recognized by the authorities of the Young Men's Christian Associations.

Upon this point, in connection with a small exhibit of the industrial work done by a few of the Association classes, Mr. Hodge says:

EXHIBITS.

The interest in this subject and the beneficial results therefrom in the school year of 1893-94 increased phenomenally the past year, culminating in the recent exhibit at the Springfield convention. A complete report, including the recommendations of the board of judges and the awards made, will be issued by the Committee in a separate pamphlet. The results of the educational work of our Associations as indexed in this exhibit afford incentive for continuing and extending its operations by every practicable means.

The portable exhibit, made possible in 1894 by the students in the industrial class at Springfield, Ohio, has done most excellent service. It has visited the following cities, stopping in each an average of two days, and its study by the citizens, young men, and association officers, has been a most effective help in extending the work: Cleveland, Ohio; Scranton, Pa.; Buffalo, New York City, Binghamton, Auburn, Utica. Albany, West Albany, N. Y.; Malden, Chelsea, Lawrence, Quincy, Springfield, Mass.; Detroit, Ann Arbor, Mich.; Chicago, Springfield, Alton, Ill.; Dubuque, Sioux City, Iowa; Omaha, Nebr.; Ottawa, Lawrence, Wichita, Kansas City, Kans.; St. Joseph, Sedalia, St. Louis, Mo.; Belleville, Ontario; Montreal, Quebec; Burlington, Bennington, Vt.

The department is under special obligations to the Associations and individual students who by the gift or loan of their work have made possible the various forms of exhibits.

For those desiring to profit from the use of exhibits, either local, portable, State, or international, valuable suggestions from experience in their preparation, composition, and use may be found in a new pamphlet, *Educational Exhibits*, No. 684.

The progress in the development of the industrial and science studies is thus recorded for 1895, a small beginning.

EVENING CLASSES.

* * * In subjects pursued marked advance has been more noticeable in industrial and scientific lines, both as to the number of Associations and quality of work done.

While last year we reported eight Associations with shopwork courses in wood and two with those in metal, we are now able to report twelve Associations with the former and five with the latter. Three years ago there was nothing of the kind.

Six Associations have laboratory work in physics, chemistry, and electricity. In the last subject commendable progress is being made in the completion of finished projects, such as electric bells, guns, fans, motors, cars, induction coils, and volt and ampere meters, etc., for measuring currents of electricity. A large number of associations are making preparation for more extended work in the sciences of mathematics, drawing, physics, and chemistry, and their subdivisions and applications, all of which lie at the foundation of most of the trades and industries.

The Committee would strongly recommend the extension of these phases of the work and as far as possible by the laboratory methods of teaching.

The following list shows incidentally where the new movement for teaching the industrial arts had secured foothold in 1895:

REFERENCE LIST.

The following list of Associations doing specially good work in certain lines is given for the convenience of any wishing to refer to them for information regarding successful methods, etc.:

Commercial or Business Training.—Twenty-third Street Branch, New York; Baltimore; Washington; Central Branch, Brooklyn; Indianapolis; Chicago; Dayton; Cleveland.

Drawing, Mechanical, Architectural, and Free-hand.—Central Branch, Brooklyn; East District Branch, Brooklyn; Bridgeport, Conn.; Dayton; Minneapolis; Quincy, Mass.; Chicago; Springfield, Ohio; Memphis, Tenn.; Hartford, Conn.; Cleveland; West Philadelphia; Young Men's Institute, New York; Harlem Branch, New York; Albany; Montreal.

Industrial Design.—Dayton; Chicago; Grand Rapids; Twenty-third Street Branch, New York.

Work with Tools in Wood, Clay, or Metal.—Hartford, Conn.; Springfield, Ohio; Dayton; Quincy, Mass.; Minneapolis; Albany; Bridgeport, Conn.; Jamstown, N. Y.; Cleveland.

Electricity, Physics, and Chemistry.—Bridgeport, Conn.; St. John, New Brunswick; Central Branch, Brooklyn; Hartford; Dayton; Cleveland; Springfield, Ohio; Young Men's Institute, New York; Chicago; Baltimore; Washington.

Language.—Central Branch, Brooklyn; Washington; Dayton; Bedford Branch, Brooklyn; Baltimore; Chicago.

In another pamphlet of 31 pages issued by the Educational Department (No. 682) three papers read at the International Convention, held in Springfield, Massachusetts, in May 1895, are given.

In the first of these Mr. Frederic B. Pratt, discusses the "Reasons, Principles and Policy," of the educational work undertaken by the Young Men's Christian Association. From this address, the following passages, relating to the topics considered in this Report, are taken:

RELATION OF EDUCATIONAL WORK TO THE ASSOCIATIONS.

All forms of laboratory, shop, and studio work, in so far as they compel and demand individual thought, reasoning, and insight, are means whereby we try to develop the man. It is not the pouring into a man knowledge that makes him wise any more than it is the pouring into him of sermons that makes him true and pure and strong. We want to draw out of him wisdom and goodness. We believe he possesses inherent characteristics and power that need cultivation. I heard a lecture last winter by Mr. W. L. Tomlins, that inspiring teacher of music, in which a thought was presented that has clung to me ever since—the thought that nine-tenths of our young men have no individual ring or note to their characters—that they are like broken or cracked bottles, which, when sounded, give forth a dead, characterless sound. Isn't it because instead of drawing out we have been pouring in? You all know how blacksmiths dislike to work with anvils that have no metallic ring; they prefer those that reecho every stroke of the hammer. There is a subtle connection between the ring of the steel and the inspiration which strikes the blow.

The educational principle, then, has a distinct position in the Association program; not merely because it is a financial aid, not merely because it attracts men, not merely because it gives an opportunity to surround the students with all possible refinement and ennobling things, but because of its own intrinsic worth in the development of character and power, and this mainly, if not entirely, through the influence of the instructors.

In the second place, the opportunities of doing a helpful work in the educational lines are second to none. It is perhaps not necessary to state that a large percentage of our young men leave school before proper development, and are dependent upon evening classes for all the systematic instruction they will ever get. Keen and active as competition has been heretofore, the indications are that the future will show an increase greater than any previous age. England, France, Germany, and Belgium—and, in fact, all Europe—are one hotbed of active competition. And the thousands of foreign workmen who annually come to this country only add to the competitive element among the American-born young men. Percy Alden, the leader of the Mansfield House in London, recently stated that he had seen, only last summer, hundreds and thousands of workmen fighting with one another for work before a factory which needed a few extra hands. We have not come to that condition of affairs in this country as yet, but unless the association and all other similar agencies come to the rescue in educational work, the indications are that the example of London will be repeated in all the large cities of this country.

Nor is it necessary to mention, I think, that the Association is the organization now in the field best prepared to do educational work. The places are small and few in number where no Young Men's Christian Associations exist, and time will see these occupied. The Association, in most places, has property—a guarantee of

permanency, good faith, and stability; it has its paid secretary; it has its rooms and facilities; and there is a public character to the work, all of which would lead one to think that the Association not only can, but should seek and demand the privilege of doing all the evening educational work. You will not forget the experience of the London Association when, some years ago, it declined to undertake what the Polytechnic has now assumed, with such great success.

Nor is it necessary for me to say that the class work is the most practical way of helping young men to help themselves. The more valuable a man can make himself to his employer the more he appreciates him and his work, the better citizen he is, and the truer friend of the association.

* * * * *

The educational problem before the Association is how to adapt education to the needs of life. The experiment has been carried on throughout this country on several different lines, and each with varying success. There have been lecture courses and classes on the University Extension plan; there has been trade work, technical work, and laboratory work, and there has been day work as well as evening. These experiences have given us a certain basis for determining what should be the policy in the future.

We know the character of the men who have been attending the educational classes, and the line of work which has been to them the most helpful. We know, too, that 50 per cent have been enrolled in the commercial, 8 per cent in the scientific, 10 per cent in industrial, 17 per cent in languages, 2 per cent in sociological, 13 per cent in miscellaneous branches. We also know that, as a rule, class work is not over six months in length, that it averages two nights per week, and one and one-half hours per night; that the men, as a rule, are business men, who come after a day's work, and are always tired and fatigued, and that many of them, through lack of early training, have not great aptitude for study. On the side of the association we know that, as a rule, the facilities for doing the best educational work are lacking. Few have laboratories or proper equipment. Few have educational directors, and but few have made that careful study of the question which it certainly deserves. We also know that there are other organizations in the field doing competitive work; the institutional church, the evening classes of the public schools, and the various private institutions are all seeking to do a similar work. So much then for our knowledge and experience. What do we glean from them, and what do they indicate for the future?

The following points are then made; first, the obvious one that in the educational work by these Associations they are dealing with special conditions and must aim to "reach the largest class of men possible;"—that there must surely be a progressive demand for better,—that is, consequently, more costly instruction; that the movement of population and development of manufactures compels extension and increase of the work; finally, that there will eventually be need for four differing classes of men to be trained in these Associations. First, the business men; Second, the political leaders; and, finally, the technical experts and industrial workers, and the artist-artisans. The last groups are those for whose more complete training and development the volumes of the present Report are pleading.

The third class for which the demand for educated men must come is composed of those who are employed in technical and industrial pursuits, and this work, as yet, has hardly been touched in the Association. There is barely a handful of laboratories—chemical, physical, electrical, or engineering—in the Associations. Shopwork, both in wood and in metal, is being carried on in only a few of the cities, and as yet the trade work, as such, has been scarcely considered. And yet these are the lines of industry and manufacture that occupy the time of nearly ninety per cent of the young men of this country. Outside of a few institutes and private associations, the university, the college, and the high school, the laboratory features of technical work are scarcely known. I can not but feel that the laboratory method is the only right way of teaching these technical and scientific subjects; a way by which each man makes his own experiments, sees his own results, draws his own conclusions. This science work is really the basis of all successful trade work, as by means of it the processes become exact and the reasons clear. Often, too, this laboratory work is the best for an Association to do, because the students are employed in the actual work of the day and in the evening

demand that change of thought and that rest from physical work which come through lecture and laboratory instruction. And so I feel that mathematics, physics, electricity, chemistry, and mechanics are to become more and more the basis of our technical work. A similar plea holds good for shopwork, for, while it is confined to trade work, it touches those fundamental, constructive industries which have to do with the building up of all structures, whether buildings, factories, bridges, engines, or locomotives; and here, too, the underlying principle is drawing, and this combined with shopwork gives that trained hand and eye which underlie all successful trade work.

LACK OF NATIVE-BORN AMERICANS AS WORKERS IN INDUSTRIAL TRADES.

That there is need of our American young men receiving a proper training in the trades is emphasized by the fact that in 1880 the total number of men engaged in the trades of blacksmithing, mason work, cabinetmaking, carpentry, machinist, painting, and plumbing in the city of Brooklyn was 18,487. Of these 9,456 were foreign born. In New York City the total number was 42,498, and the number of foreign born 24,974. It is confessedly the fact that the large bulk of these immigrants are not of the better class of foreign workmen, but, on the contrary, are the poorest, the dregs of the foreign labor market, who have found it impossible to compete with better trained workmen at home, and who have come to this country to better their condition.

These men, often miserably trained, are at once admitted to the trade unions, without any test of character or ability, the voucher of an acquaintance being the only form required. Brought up in comparative poverty in Europe, and regarding capital as the natural enemy of labor, these men have introduced Old World prejudices and narrowness into American labor organizations, until to-day the unions of all of our larger cities are unreservedly committed to the practical expulsion of the apprentice and to the principle of trade monopolies.

VALUE TO A COUNTRY OF ARTIST-ARTISANS.

The fourth or the last set of men to be demanded by this growing country are the artist-artisans; those whose duty it must be to direct the taste in all manufactured articles that in any way offer opportunities for such expression. The fact is so well known that it hardly needs statement that this country is among the last to have considered this fact as essential to successful work, and yet the experience of France and of Japan indicates only too clearly that quite aside from the pleasure which beautiful things give there is a commercial value far exceeding in conception that which we Americans now have. These are the classes and kinds of men that the public demand and that the Young Men's Christian Association can supply.

So, finally, when I say that the educational is a fundamental work, I mean not merely that it is independent of others, but that by its nature it is consecrated to the very highest and best purpose of the Association, that it is undertaken for the sake of the salvation of men. I mean, too, that because it is fundamental it has a dignity, an importance, and a power immeasurable to us at this time. Like every successful enterprise we have got to believe in it and to make a business of it. If it is worth doing at all it is worth doing well. Quality should be our keynote, even though our classes are small.

And because it is fundamental, our principle and our policy must be based on intelligence, perseverance, prayer, and faith, those qualities which have made the Young Men's Christian Association what it is, and which will make it a power for good second to none.

The second paper giving an account of the educational institution in London, already referred to in a previous paper quoted, is here given in full, and is most valuable for its suggestiveness in many directions.

SIDE LIGHTS FROM ENGLISH POLYTECHNICS.

[D. A. SINCLAIR.]

Through the kindness of an American gentleman in London several of the delegates to the Jubilee Conference of last June had the pleasure of meeting the founder of the London Polytechnic, Mr. Quintin Hogg, who, though untitled, is a veritable prince among men. The writer was so fortunate as to be one of the callers on Mr. Hogg at the Regent Street Polytechnic. When the gentleman discovered that his American visitors wanted information in order that they might profit by his experience he readily responded to what he termed our "Yankee interrogations," and

thus we had the pleasure and profit of some inside lights as to the working of an institution which is certainly well worthy of its world-wide fame.

THE SMALL BEGINNINGS OF THE LONDON POLYTECHNIC.

In 1865 Mr. Quintin Hogg opened a ragged school in York Place, Strand, where he personally managed the work for over five years, a greater part of which time he lived among the boys he was seeking to educate and uplift. This work grew and prospered so rapidly that soon it was no longer a ragged school, but, by the addition of evening classes, a Bible school, and dormitories, had developed in 1873 into an institute for working lads, with a membership of about 500 and over 100 candidates constantly waiting for admission. In 1881 the old London Polytechnic, founded in 1838, had to be abandoned and the property came into market. Mr. Hogg's keen business judgment led him to see that the old building could readily be converted into an institution which would be a hive of activity for the improvement of thousands of London's young workingmen. He purchased the building for £50,000 and spent an additional £100,000 in alterations and additions. At the reopening of this building Mr. Hogg said: "We now have ample space for almost any possible development in the future;" yet within less than one year the place was overcrowded. Two stories have since been added to the original building, the adjoining property on both sides has been secured, and still the cry is for room, more room. The membership at the present time is something over 4,500, and 15,000 more are enrolled in the classes or connected with other privileges of the institution. On any evening a visitor will find 5,500 to 6,000 young men gathered within its halls and class rooms.

THE FOUR SOURCES OF SUCCESS.

The marvelous growth and substantial prosperity naturally led us to inquire as to the secret of success. We discovered the following answers:

(1) The enthusiasm and consecrated ability of its Founder and President, Mr. Quintin Hogg, and his associates.

(2) It is a work that meets the need of the largest and most important class of young men.

(3) It possesses a form of organization that develops a spirit of fraternity and enlists enthusiastic cooperation from all the members.

(4) The thorough but unostentatious Christian spirit which pervades the institution.

We shall endeavor to elucidate these four characteristics in the hope that, as side lights from the Polytechnic, they may throw some additional light on the possibilities of a similar work in this country through the instrumentality of the Young Men's Christian Associations. First, the President and governing body of the Polytechnic govern. The men are not selected for ornament, nor as a compliment, but because of their thorough interest, marked ability, and constant readiness to give thought and time to the supervision of the institution.

To carry on such an extensive work necessitates a large number of paid employees; yet the policy, plans, and direction rest in the governing body. All the employees are subordinate. Thus, one suggestion is that we, as general secretaries, do not assume to be general dictators, or imagine our boards of managers must be directed, rather than be our directors. We will do well to give more time and thought to the discovery of Christian business men who will be directors in fact as well as by official title. Just here we repeat an old warning, the real danger to the growth and permanency of the association work in America is "secretarialism."

THE POLYTECHNIC RECOGNIZES SOCIAL NEEDS OF YOUTH.

Second, the work meets the needs of the largest and most important class of young men. This it does largely through its educational features and social attractions. Mr. Hogg's own words as to the importance of the social agencies will carry more weight than anything we could possibly say. Recently he wrote as follows:

"I think the mistake of many who have failed in efforts to reach and interest young men, is that they have neglected the social element. Young fellows who have been at work all day don't always want in the evening to attend either a prayer meeting or a lecture, or even to read books and magazines. You must provide opportunities for amusement, recreation, and friendly chat. I attribute the remarkable success of the Polytechnic largely to the fact that we have provided the members with rational amusement, and facilities for getting to know one another and making friendships. Besides commercial, science and art classes, technical

and practical trade classes, we have over forty clubs of all conceivable kinds—cricket, football, tennis, swimming, boating, cycling, rambling, etc. Most of these are organized and managed by the young fellows themselves, with a little friendly aid from us, and they hold social and musical evenings from time to time, and annual excursions."

One of the most noticeable attractions in the Polytechnic, combining the social with the educational, is the use of the stereopticon. The institution has a fine instrument, which is used almost every evening after the classes are dismissed. Frequently the subjects taught are made doubly interesting by showing a series of views related to the class work. Proposed excursions are advertised, showing views from the places to be visited. The stereopticon is also made to serve an important part in the religious work, for evangelistic services, and to give information and stimulate interest regarding mission work.

The excursions form another important feature. Their popularity is shown by the fact that over 10,000 members have taken advantage of the various trips during the past four years. As an educational agency these excursions have proved of incalculable value. There have been trips to Norway, Switzerland, France, Germany, Belgium, Morocco, the World's Columbian Exhibition, etc.

We have said that the Polytechnic succeeds because of the class of young men it benefits. Every department of its diversified work is planned with a view to reaching what is known as the artisan class. We believe it will be admitted that none stand in greater need of these benefits than young tradesmen and mechanics. They are quick to show their appreciation of such advantages. The great problems which concern the social, industrial, and political life of our times will be settled largely according to the views held by what are known as the working classes, and we believe an unparalleled opportunity is open to the Young Men's Christian associations through the educational work. Industrial training, social attractions, and religious work will touch and direct the thought of thousands of these men, so that they will not only become good citizens here, but also be led to accept by faith a citizenship in the Kingdom of Heaven.

VOLUNTARY SOCIETIES AND CLUBS AMONG POLYTECHNIC PUPILS.

The third element of the Polytechnic's success is in its form of organization. Reference has been made to the position and services of what is termed the "governing body," but the method of organization for carrying on the several departments of volunteer effort is very interesting and decidedly successful. Almost every line of work is carried on through the organization of a club, there being over forty societies and clubs among the members. These are managed by the young men themselves, and naturally lead the fellows of kindred tastes to associate for the prosecution of the particular work in which they are personally interested. Now, in our Associations we follow the committee form of organization. Committees are appointed, usually by the President, Directors, or General Secretary, and frequently those appointed are not in touch with the young men who are to be interested and benefited by the work entrusted to them. Hence the young men soon regard the committee appointed simply to "boss the affair," with the result that no interest is awakened or developed among the men themselves. We are confident that the polytechnic form of club organization can be successfully introduced in connection with many departments of our association work in America. In fact, the truth of this has already been demonstrated in a few associations where the system has been tried. Certainly any method that will develop a larger degree of the fraternity spirit should be encouraged. The esprit de corps of the Polytechnic's members is quite remarkable, and productive of the most excellent results. An age limit at each extreme has contributed much to the development of this spirit. The membership has two divisions, boys from twelve to sixteen and young men from sixteen to twenty-five; those over twenty-five are elected as associates and required to pay double fees. However, those who unite with the Polytechnic under twenty-five are not required to pay the double fees on reaching that age. The very low membership rate, and the system of quarterly payments, is one secret of the enormous enrollment. For seventy-five cents per quarter, or \$2.50 per annum, young men are entitled to the free use of library, reading room, conversational, social, chess and checker rooms, and the splendid gymnasium; admission to the swimming bath, concerts, entertainments, lectures, etc., besides the recreation grounds of twenty-seven acres at Merton Hall, Wimbledon.

A fine boathouse at Chiswick, well stocked with boats, is reserved for the use of the rowing section. The Polytechnic is also attached to the Paddington Recreation Grounds, and the cyclists and harriers have free use of the running and racing track. Members have the privilege of joining any of the classes at greatly reduced rates.

RELIGIOUS ACTIVITIES.

The fourth element of strength is found in the religious life and activities of the Polytechnic. As the members have nothing to do with the election of the governing body, there is no need for any membership distinction between those who are professing Christians and those who are not. Thus the religious work in the matter of administration is very broad; but notwithstanding this fact we discovered in their religious gatherings a spirit of intense loyalty to the Word of God, and a most pronounced enthusiasm in the work of missions. Some of the religious clubs have contributed from \$500 to \$750 per annum for foreign-mission work. The fact that the polytechnic management has never paid any attention to the question of the relation of the institution to the churches, leads them to plan and prosecute their religious work without any reference to the regular services of the same. This ignoring of the churches may do for London, but it will not do in America, and should never be countenanced in connection with our work.

Time remains for but one more suggestion. Many of our American Association excuse themselves from engaging in the educational work because of limited accommodations. The Polytechnic gave us an object lesson on economy in the use of space and time. Several classrooms, by careful division of time, were made to accommodate two different classes each evening, and, in some instances, three. Every foot of space from underground basement to attic was made to serve some good purpose. An art class was found in the attic where it was possible to stand erect only in the center of the room. We believe that some of our American Association would hasten the day in which they are to have larger buildings by making better use of the quarters they now enjoy.

The total expense of the past year amounted to about £38,000. About £28,000 was received from the members and students. To the deficit of £10,000 the London Charity Commission gave £4,000. The balance is made up by an annual contribution of £1,000 from Mr. Hogg, and contributions from other friends.

The following "fly leaf," prepared for distribution in connection with an exhibit of the work of the classes, gives a succinct statement of the recently formed "Educational Department: "

YOUNG MEN'S CHRISTIAN ASSOCIATIONS OF NORTH AMERICA.

EDUCATIONAL DEPARTMENT.

This department of the work for young men comprises the following agencies:

1. Reading rooms.
2. Libraries.
3. Literary societies.
4. Lectures and practical talks.
5. Evening classes—
 - (a) Commercial subjects.
 - (b) Sociological subjects.
 - (c) Industrial subjects.
 - (d) Scientific subjects.
 - (e) Language subjects.
 - (f) Miscellaneous subjects.

The object of these agencies is to surround young men with all that is desirable and beneficial in supplementing the lack of earlier opportunities and in the upbuilding of mental character.

The supervision of this great work—raising its general efficiency and extending as rapidly as possible—rests in large measure upon the international committee.

Carrying it on is dependent entirely upon the voluntary subscriptions from friends of this important part of association work.

The educational department of the International Committee was but recently organized—October 1, 1892—and as yet only one person is employed, but as soon as the funds will permit much needed additional help will be placed.

Evening Classes.

The object of this paper is to call special attention to the work of the evening classes, in which twenty thousand young men are being aided, 50 per cent of whom are pursuing commercial subjects, 2 per cent sociological subjects, 10 per cent industrial subjects, 8 per cent science subjects, 17 per cent language subjects, 13 per cent miscellaneous subjects.

The young men in these classes are engaged during the day obtaining a livelihood, and having leisure only in the evenings, still prefer to devote this time to increasing their ability rather than to pleasure. The average age of these twenty thousand young men is twenty-three years.

For their daily occupations, there are three times as many young men needing training in industrial and science lines as in commercial; yet there are four times the number of men training for commercial as for industrial positions.

With the great field of industry before young men, it was thought wise by the International Committee to call the attention of Associations to the successful work already accomplished by a few organizations in aiding thousands of men in industrial advantages, to the end that many more Associations might open the way to extend their work and help other thousands of deserving young men.

This exhibit, therefore, for the above reasons, is confined exclusively to the industrial department of our evening class work, in which fifty Associations are already successfully offering facilities.

The International Committee does not hereby recommend any the less attention given to commercial, sociological, language, or miscellaneous subjects now taught, but simply refers, by means of this exhibit, to a comparatively unoccupied field for helping thousands of men, and an opportunity which will well repay the extra efforts of all associations to embrace and cultivate.

The work is just as it came from the class room, and when executed was not intended as an exhibit, hence is free from the characteristic preparation generally found in such productions.

This exhibit shows specimens of courses in free-hand, mechanical, and architectural drawing, and industrial design, leading toward such technical lines as machine construction, boiler making, carriage draughting, wood and metal working, civil, mechanical, architectural, and electrical engineering.

The places and courses of industrial training represented in this exhibit are:

Springfield, Ohio.—Courses in mechanical and free-hand drawing, also the most complete work in wood and metal, including a two-years' course in carpentry, wood turning, pattern making, forging, and machine tool work.

Dayton, Ohio.—Courses in mechanical, architectural, and free-hand drawing, of three, two, and two years, respectively; work in wood and iron, also wood carving and clay modeling; work in electrics from the junior department.

Brooklyn, N. Y.—Courses in mechanical, free-hand, and architectural drawing, and a complete course in industrial design.

Hartford, Conn.—Work in mechanical and free-hand drawing, and one-year course in elementary carpentry.

Twenty-third Street Branch, New York.—Courses in mechanical and free-hand drawing of two years each; railroad office work.

Young Men's Institute Branch, New York.—Courses of two and three years in mechanical, architectural, and free-hand drawing, carriage draughting, electrical design, steam and electrical engineering.

Chicago, Ill.—Work in mechanical, architectural, and free-hand drawing; also a course in wood working.

The frames, trays, and case for this exhibit were made by the industrial class of Springfield, Ohio. At present this association has running a full line of shafting for the operation of machine tools, and very much of their equipment is the product of class work. In 1892 and 1893 they were the first to introduce shop work in wood; now eight associations are likewise engaged.

Your association requested the presence of this exhibit to show you what subjects were successfully pursued in a number of places that have made special effort to help young men in industrial lines, that interest here may be stimulated and the way opened for this association to extend its educational work in this direction.

Another pamphlet treats of the proposed "exhibits," and is given here in full, except two pages of "forms."

EDUCATIONAL EXHIBITS.*

Exhibits are heralds of progress; they mean action, and action means life.

That there is both a Science and an Art of exhibiting, people are beginning to admit. From the artistically and intelligently arranged store window to the Columbian

* Educational Department, Educational Exhibits: Their Value, Composition, and Use in the Young Men's Christian Associations. George B. Hodge, secretary. The International Committee Young Men's Christian Associations, No. 40 East Twenty-third street, New York City, No. 684.

Exposition at Chicago in 1893, the thought, energy, and money put into these vivid practical object lessons each year, though in cases the money amounts to large fortunes, are rapidly increasing. Yet that they make the most convincing arguments and yield the largest returns on the investment no one will deny. The purpose of this leaflet is to consider briefly the value, composition, and use of exhibits for improving and extending association educational work.

I. VALUE.

We must remember that exhibits are not the product of education. This visible material, called exhibit, is but the means used through which the mind has passed toward its best development for right thinking and doing.

It is not the drawing, but the greater power to see; not the piece of wood or iron work made by the student, but the development of that individual power rightly to think, will, and execute, that constitutes the real product of education. Hence, we must look through an exhibit to both the mind or thought that produced it and the individual power trained or developed by it, or we mistake its meaning.

The value of an exhibit also lies in the fact that the visible presence of work done always stimulates in others the desire to create its equal or superior.

All work of pupils for competition or reward purposes should be precisely as it left the student, or it is not only valueless but positively harmful because of its misrepresentation. The value of an exhibit is greatly increased if no article inaccurate, soiled, or carelessly executed is allowed in it. One such piece with a hundred good ones will unfortunately be seen and remembered. If each association will insist on having all work accurate, neat, and clean before accepting it from the pupils for credit, there will be no chance of injuring an exhibit. The effect of such a requirement will be to make the pupils more careful in all work, and correct many habits of haste and inaccuracy.

II. KINDS OF EXHIBITIONS.

In point of use in the Associations, there are four kinds of exhibits, which during the past two years have accomplished more for the extension of educational work than is generally admitted.

1. *Local.*—For a few days at the close of the season's class work there has been arranged systematically in the Association buildings work from a few of the classes, usually in drawing, bookkeeping, and penmanship. It is strongly recommended as a good investment that much more be made of this part of the closing exercises; that all the work called educational be represented by some means or facts which describe their object, use, and beneficial results. The work of the library, reading room, literary society, practical talks, and club, should, by a statement of facts concerning the attendance, work done, etc., be made a part of the exhibit. The classes in language, commercial, scientific, and other subjects could and should be represented in the exhibit if the suggestions for written exercises described by the committee in pamphlet No. 665 and in the review papers No. 666 were used.

2. *State.*—These are now being held by the leading States in connection with their annual conventions. The first was held at the suggestion and the cooperation of the committee at the New York State convention, 1893, at Saratoga. The results have all exceeded the most sanguine expectations, especially when they have been given any attention and business energy.

It is recommended that all States follow the example of New York, Ohio, and Illinois in this respect. It presupposes that a qualified person will be engaged by the State committee to secure for the State convention, arrange, take charge of, and report upon such a collection of material in a State as will best show the scope and quality of work done in the various associations.

3. *International.*—In 1893 at Indianapolis, and also at the World's Fair in Chicago, occurred the first international exhibit. This was made possible by the hearty cooperation of twenty-five Associations who sent material from their evening classes. It was a surprise even to Association workers and a revelation to the general public, from whom came the warmest words of commendation.

This was the first time that an exhibit of Association educational work had ever been made when the general public, and especially those outside of Association influence, could see the practical manner in which the young men were aided to help themselves. These silent object lessons, speaking volumes not only for its educational work, but through that for Association work as a whole, raised the Association standard and increased its popularity and financial constituency.

The public may be depended upon for cooperation in a movement for practical education which is founded upon and controlled by the principles of the Nazarene

mechanic, "who went about doing good." From this World's Fair exhibit began the widespread interest now being taken in this part of the committee's work.

4. *Portable*.—But not all people have learned of this work at the places mentioned or at any other place. Probably not one in a thousand of the young men most needing such facilities, or even of those persons in a position financially to aid and direct such movements in the Association are acquainted with the work. An even smaller number realize the opportunity to serve young men, and through them the city, State, and nation, by pushing such work vigorously. To cultivate the field in this direction, bring the work to the direct notice of those who should be interested, the International Committee placed on the road a portable exhibit.

Since its first appearance in Springfield, Ohio, May 4, 1894, it has visited many Associations throughout the eastern, north central, and middle west States. Thus there has been brought to the attention of many thousands, who otherwise would have seen or known nothing about it, this phase of work. To this means of propagandism very much of the prevalent active energy in this direction can be traced. Already this season (June, 1895) there are more invitations for a portable exhibit than two persons can answer.

5. *Portable State exhibits*.—The demand for the portable exhibit is so great, and the results of its visits so generally beneficial, that there is large opportunity for each State committee to make good use of a small portable exhibit of its own. Each large State and each group of smaller States should have one. Such an exhibit, gotten together with comparative ease by the cooperation of a few Associations of the State, in the hands of a person employed by the State committee to give a part or all of his time to developing this part of the work, would pay large returns on the investment.

At present the Hillyer Institute of the Hartford (Connecticut) Association has arranged a most admirable portable exhibit, which has already done valuable service in visiting a number of points in New England.

III. USE.

Comparatively few people know of the work of the Young Men's Christian Association. Unfortunate prejudices either prevent the majority of people, especially young men, from coming to the building to become acquainted with its work, or help them to turn a deaf ear to a verbal or written description of the attractions.

Christian strategy may be used to good advantage. A number of Associations this season have been taking advantage of opportunities in this direction with most excellent results.

This opportunity consists in securing a large show window in the most public place in the city, or the use of the city library, and arranging in the most intelligent manner possible the work of the students in the evening classes, together with data of the other Association educational agencies.

Thus these object lessons are brought to the knowledge of thousands who would not see or know of the work done. Good results follow.

IV. MATERIAL.

For all exhibits the collection of material is very important. The regular work of the classes should in no case be interrupted, and no work should be made specially for exhibit, unless so labeled.

Every Association has the right (as yet but little enforced) to retain part or all the product of the students' work in classes. This right is reserved and exercised by all our best schools, and should be embraced by the Associations, thus enabling them to prepare for any or all of the above-described exhibits.

The Committee can not too strongly recommend the exercise of this privilege to retain such material as is desired for the utmost efficiency and widest extension of the work as a whole.

Prepare your plans wisely, and at the beginning of the school year announce as one of the rules that the Committee reserves the right to select one or more specimens of each student's work for its own use. This is simple in practice if the teachers retain all drawings, etc., until the close of the term.

If the system of suggested written review exercises, recommended by the Committee in pamphlet No. 665, be followed, there will be all the material needed for exhibits in all subjects. Accept no faulty material from pupils for exhibits.

It is strongly recommended also that some of the best work of a similar nature be collected, not only from other Associations, but from the best schools, day or evening, and arranged neatly in the rooms devoted to educational work.

A few leading cities are making excellent progress in this direction. By this means higher ideals are kept before the students, and the value of this constant, unconscious incentive to more and better work can not be estimated.

V. ARRANGEMENT.

This is of far greater importance than is generally supposed. The work must be correctly labeled so that it will be intelligible and self-explanatory. It must tell where and under what auspices it is done, who are its benefactors, who are profiting thereby, what the beneficial results are in the citizenship and wage-earning capacity. It must be arranged systematically and progressively. The average person, untold, should be able to see where the student began, in any subject, as the first lesson in drawing, and then in order, from top to bottom, or from left to right, should follow the different progressive steps in the course covered. In penmanship, for example, it is interesting to note the progress of improvement in the student's "hand" through the season's work, as shown in a sample taken each month.

Exhibits generally have suffered by having too few labels to explain them.

Facts concerning results of work in classes, of the attendance, of the number of young men who need help in this direction, of the number in the day public school, of the expense of educational work, of positions secured by young men profiting from the class instruction, etc.—all are valuable in an exhibit to give information, while the people's interest has been attracted to the Association through the exhibit.

The mounting on cardboard of exercises and drawings for best appearance is important. Many individual methods will occur. Ingenuity plays an essential part. With the prevailing standard size of cards for such purposes, as 22 x 28 inches, it will be wise to arrange all small articles intelligently and artistically within a space of 20 x 25 or 26 inches, leaving a margin of the card to act as a frame, thus improving the effect of the whole. It was noticed that at the international exhibit in Springfield, Massachusetts, 1895, the Associations whose work was the most neatly mounted carried off the larger number of awards. It pays well to be neat and orderly in mounting an exhibit.

As this MSS. was on the point of being sent to press the "Annual Report of the Educational Department of The Young Mens Christian Associations of North America for 1896" (No. 664) is received.—This is a handsome little pamphlet of 42 pages; with several pages of photographic illustrations showing the various Industrial classes in Drawing; in Wood and Iron working, and Plumbing; in Electricity; and, also, the classes in studies such as Arithmetic, Bookkeeping, German, etc.—a very interesting series of pictures of groups of bright looking boys intent on their occupations.

From this Report a few extracts relating to Industrial work, are taken; also, the whole of the final very interesting paper by Secretary Hodge, in which he compares the kindred work done in European countries with these efforts in our own.

INCREASE OF INDUSTRIAL COURSES IN THE ASSOCIATION.

Two years ago there were reported eight Associations with shopwork courses in wood and two with courses in metal; last year twelve Associations operated work in wood and five in metal; this year twenty-two Associations have courses in woodwork, either carpentry or carving, or both, and eleven have courses in metal work, forging, and plumbing. Four years ago there was nothing of this kind.

Last year six Associations reported laboratory work in physics, chemistry, and electricity; this year twelve Associations are pushing commendable courses in these directions and at comparatively small expense, while twenty-five Associations report work in electricity with more or less of the laboratory feature in the illustrative experiments. Commendable progress is being made in the application of principles in the completion by the students of finished projects, such as electric bells, motors, guns, fans, cars, inductive coils, etc.; also volt and ampere meters and other instruments for measuring currents of electricity.

In many of the Associations plans are being made for more extended work in the sciences of mathematics, drawing, physics, and chemistry, and their subdivisions and applications, all of which lie at the foundation of most of the trades and industries. The Committee would strongly urge the extension of all these phases of education, and recommends that as far as possible the laboratory methods of teaching and investigation be introduced.

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CLUBS.

We have had a growing conviction, which has been much increased since our study of the Christian Polytechnic in London, that very much more could be realized to the Associations through the fostering of the club spirit, especially in the educational department. The managers of the London Polytechnic attach great importance to the social and educational character of the forty clubs that exist in that wonderful Christian beehive.

We must recognize the fact that in such large bodies of men as are found in our city Associations, or within their reach, there will of necessity be a great variety of tastes, desires, temperaments, and ambitions. These can not all be attracted or satisfied by the ordinary social work.

To some extent these facts have been realized, and a few Associations have introduced the club idea, thus bringing together men of like tastes and interests for the promotion of these interests by methods of their own devising. In the Brooklyn Association this plan, which has been in operation for several years, has succeeded admirably in holding together the members.

Looking through the Associations we discover the following forms in which this thought has thus far been developed: Musically, we have the glee club, the banjo, mandolin, and guitar club, and the Association orchestral club; artistically, the camera and the sketch clubs; intellectually, the literary and debating society, reading circle, English club, current topic club, etc.; industrially, the electricians' club, the draughtsmen's, the technical, and the scientific clubs; politically, the civics' club, present-day problem club, up-to-date club, city council, congress, etc.

We also have numerous clubs for physical and recreative work (which the students in the evening classes should be judiciously urged to join), such as clubs for wheeling, bowling, tennis, rambling, and the various ball games. The club idea has also been successfully introduced into the religious department. A Bible study club in the Brooklyn association meets each week for study and each month for social intercourse.

Within these clubs there are generated feelings of comradeship and a knowledge and interest in the Association that could be attained in no other manner, and this interest and the so much needed resultant feeling—an esprit de corps of the membership—are felt throughout the entire work.

The fact that so many joining the large Associations identify themselves with one or more of these self-sustaining suborganizations proves the value of the club feature in Association work as a whole and by implication its special importance in the educational department. One of the greatest needs in the social world of to-day is for men to know each other better, and thus be better able to "help the other fellow."

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EDUCATIONAL AIM.

A gradual change in the conceptions of the real aim of practical education has been taking place during the past ten years. The old idea that made it mean the mere gathering of facts, the massing of knowledge, has been set aside as inadequate, and the most successful, intelligent, Christian business men feel that education means discipline, growth, intellectual and moral power. Its aim is threefold: First, character; second, culture; third, conquest. Our thoughts, plans, and efforts in this part of Association work may most wisely aim to develop in our young men strong Christian character; the refinement of culture or the love of the beautiful in literature, nature, art, and conduct; and conquest, or the ability to "bring things to pass," to accomplish results. Unless our work does make the young men in the classes morally better, purer in thought, kinder in conduct, more able to do their own thinking, better fitted for their daily occupations and for lines of increased Christian usefulness, the work is unworthy the name of this department of the Young Men's Christian Association. The highest education should be, must be, Christian in spirit, and conducted on Christian principles.

Dr. Arnold, of Rugby, said: "It is not necessary that Rugby have three hundred students, or even fifty, but it is necessary that its students become Christian gentlemen." So let us in our work aim at leading the largest possible number of men to develop lines of largest possible Christian usefulness.

THE CENTRAL OBJECT.

Many of our workers are beginning to feel that there are exceptional opportunities in connection with the educational department for coming into sympathetic touch with a large and most important class of young men and exerting upon them a powerful moral and religious influence. If we remember the chief and sacred

aim of our organization, and are loyal to it, we will not fail either as individuals or as associations to make our influence felt to its fullest extent. Many of these young men will be with us but a single season; no one should go from us without having been lovingly and earnestly and tactfully invited to the Great Teacher, who is the way, the truth, and the life. During the past year, through the use of the various means, one hundred and sixty-seven souls are reported as led to Christ from the educational classes.

TRANSATLANTIC SIDE LIGHTS ON EVENING SCHOOL WORK.

[GEORGE B. HODGE.]

Through the kindness of a friend of the International work, and without expense to the International Committee, it was recently my privilege to gain a much desired view of America, and more particularly of our evening educational work, from the outside and in comparison with similar work abroad. The following are some of the lessons and strongest impressions received:

EVENING SCHOOLS IN ENGLAND.

1. Appreciation of evening school work: This was a happy surprise. The realization of its value and importance, the appreciation of the facilities offered, and the commendable pride taken in it by the people—young and old—by business corporations and by the Government, were all far beyond my anticipations. In London, with its 6,000,000 people, 2 per cent of the entire population are found in evening schools. In the cities of England outside of London this per cent increases to from 3 to 8 per cent. In Bradford, England, a place as large as Cleveland, 8 per cent of all the people—men, women, and children—are found in evening schools. Similar proportions exist in the cities of Europe, and in all cases this is aside from the attendance at the day schools. In comparison this work in America sinks into insignificance. It is estimated that in New York and New England, where the most is done in this direction in proportion to population, the ratio is all less than 1 per cent. The reason of the wide difference on the two sides of the Atlantic is due to these facts: There they realize the importance of this work upon the individual in making him of definite value, not only to himself, but as a factor in the development of the manufactures and industries of the country, while here there seems to be an apathy, a feeling on the part of a great majority of almost utter indifference as to making the most out of life, either as concerns the individual or the country. Especially do the young men as a class fail to earnestly look into and provide for the future, caring more for the present and for having a "good time."

From this experience and comparison we are led to feel that the responsibility on every person and organization in America having the best welfare of the individual and the country at heart is emphatically great and constantly increasing. Here, then, is opportunity for the association to renew persistently and continually its efforts to convert this attitude of general indifference into one of hearty desire and appreciation.

CAUSE OF RECENT RAPID INCREASE OF EVENING SCHOOLS IN ENGLAND.

2. The increased growth of evening school work in England for the past six years has been phenomenal, and almost entirely in science, art, and industrial subjects. The attendance has increased more than 300 per cent. This is explained as follows: Six years ago the commercial and industrial eyes of England were for the first time opened to the great inroads Germany and France were making on British industries and manufactures. As the result of improved designs and inventive genius great quantities of manufactured products, which should have been designed and made by the English people themselves on their own soil, were being sold to them by their most studious and industrially specialized, though thoroughly disliked, neighbors. Realizing that the prosperity, if not the very life, of the people of England lay chiefly in these manufactured and industrial products, and that millions of pounds were going annually to Germany for things they ought to be clever enough to manufacture themselves, a royal commission was appointed to make a study of the problem. This commission found Germany full of evening schools, specializing the interests of the more prominent trades and industries.

The British people then began to realize that the technical evening school, with its definite educational facilities and stimulating influences, lay at the foundation of the best development of work and workers, and was to solve the question of life or death to them as a commercial and industrial or manufacturing nation. This

thoroughly aroused them, and the present attitude towards and the attendance upon these schools is the immediate and logical result.

Portions of the United States, notably New England, are to-day in quite a similar position regarding manufactures and industries. Perhaps there is some appreciation of the facts and some feeling of the need of multiplying the means for more definite and practical improvement, but it is as a drop in the bucket. The association, in its work for the best welfare of young men, is failing in its duty if it does not use its power and influence actively and energetically for pushing these facilities within the reach of all, and for creating in the minds of all, especially the young men, a desire for and determination to embrace and profit by the offered opportunities.

SWISS AND GERMAN EVENING TECHNICAL TRADE SCHOOLS.

3. I was much gratified at the degree of specialization found. In many cities, such as Geneva, Dresden, Berlin, there are as many special technical evening drawing schools as there are principal construction, manufacturing, and trade occupations. In Berlin I found one school with 2,000 young men, artisans and apprentices, in which there were twenty-five different courses in drawing to match as many different occupations of manufacture and trade construction. In the Republic of Switzerland, with a population of no more than Greater New York, I found ten special schools for watchmaking. These are trade schools and the course is four years long. This busy, industrious Republic gives us a good illustration of specialization. One-quarter of the entire taxation is given freely for the encouragement and support of technical and specialized instruction.

Besides the ten above-mentioned trade schools for watchmaking, which have enabled the Swiss watches to gain and maintain their preeminence over all others, there are schools for carpenters and shoemakers, numerous facilities for wood carving, locksmithing, and metal working, which have made these industries famous the world over. There are many schools for weaving, for ladies' tailoring, art needlework, and art trade schools for women, training them for house servants and housekeepers, in all the cities of this bustling, energetic, aggressive little country. In the artistic direction there are many drawing schools, private, public, municipal, and otherwise, for all classes of people and in the interest of different occupations. Taken all together there are about ten times as many facilities of these kinds as are found in any like population in the United States.

In this specialization there is a broad field of usefulness for our Associations. The Granite Cutters' School in the association at Quincy, Mass., is but an instance of many specialized efforts that should be in operation among us along the lines of the various leading industries.

RELATION OF LABOR ORGANIZATIONS TO TRADE SCHOOLS IN EUROPE.

4. The intense interest and strong cooperation of the labor organizations with all this evening school work in Europe was another gratification. In many places the cooperation of these organizations with the evening schools is so active that all young men who are apprenticed to a certain trade are compelled to attend for two or more years the evening school which may be held in the interest of extending and improving that trade. This compulsory attendance for apprentices at evening schools is in addition to the public law of compulsory education in day schools. Attendance at the public day schools is much more vigorously enforced than with us. We are glad to know that the trade and labor organizations in America are a little more willing than formerly to cooperate with these practical educational facilities. Note the past two years' work and the successful relations of the Bridgeport Association in this direction. If the Association is to use its opportunity it must enter this field, prove to the labor organizations that we, in the name of Christianity, are seeking their best welfare, and desire their cooperation with us in efforts to improve their wage-earning ability and their standing and value, both as concerns the individual and the community.

I have been led to feel that our advertising to the effect that trades are taught in the Association evening classes is unfortunate. A trade is something that in the average public mind can not be taught or learned in less than two or three years of day work, and in six or eight years of evening work. I believe that we should encourage the organization, under Association auspices, of a number of centrally located trade schools for day work, and help open the way for every young man who desires to learn a trade to attend for the full course. Then our Associations, especially in all industrial and manufacturing centers, should conduct trade and technical classes, but allow no one to enter these special trade classes who is not connected with the trade. Provision would thus be made for both kinds of young men—those who want to learn a trade but can find no opportunity, and those who

are in the trade and desire improvement to become journeymen and master workmen. In this way we might also overcome the envious feeling of the labor organizations against trade schools, and the way be more favorably opened to accomplish what has already been referred to at Bridgeport. Moreover, this is the actual practice in all countries I have visited.

5. I was surprised to find in the average evening school such poor equipment with such large attendance. It proved at once that the equipment was not the drawing feature. The rooms, desks, seats, light, furniture, etc., as a whole, are no better than here. In many instances the money is used for models, apparatus, etc. at the expense of comfort in seats, light, and air. Our average Associations have much better lighted and more cheery class rooms and more comfortable seats than those of the evening schools on the other side.

6. The teachers were men of heart and soul, as well as magnetic and strong in the ability to attract, hold, and teach the class. Here I found one real reason for the large attendance. It will be remembered that teachers' wages as a whole are much lower in England and Europe than in America, hence the salaries paid for evening work there, while about the same in figures as here, are proportionally higher. I found it a source of great pride that they were able to secure the services of the most inspiring teachers and the most popular and eminent authorities to give their valuable time and experience to the evening schools.

THE POLYTECHNIC CHRISTIAN INSTITUTE OF LONDON.

7. The largest single institution, and the one from which the most inspiration was received for our work, was the Polytechnic Christian Institute of London. Of this work all have heard, and many have visited the institution. It was the spirit of Christ that prompted its organization and has moulded and characterized its phenomenal growth. Here you have the ideal president for a Young Men's Christian Association in Mr. Quintin Hogg, the ideal secretary in Mr. J. E. K. Studd, and probably one of the most inspiring Christian educational directors in the world—Mr. Robert Mitchell. This was the first institution known to open trade and technical classes in evening work; and although from this plant there have sprung during the last thirteen years eight or more other polytechnics in London alone, yet the attendance at the parent institution has steadily grown and is still larger than any other, being at present 11,000.

Six years ago there were 10,000 students in all London polytechnics; now there are 40,000. Some of the circumstances and conditions of the success of this work that came to me are:

- (1) The ideal force in the management.
- (2) The Christian spirit in all its polity.
- (3) The presence of men with great, warm hearts and cordial hospitality as leaders, officers, and committeemen.
- (4) The most valuable, inspiring, noble characters for teachers.
- (5) The policy which permits the members to all sit on the box with the driver and yet allows the management to hold the reins.
- (6) The active work of forty clubs within the great educational beehive for acquaintance, fellowship, sport, and the general advancement of the social work. This feature is found to be a very strong adjunct and one that we need to emphasize in our own work.
- (7) The large opportunity offered for educational tours and excursions for valuable observation.

As this great London movement to help the wage earners in their leisure hour was prompted and fostered by the spirit of Christ, so is there in largest measure a similar door open through our American associations permitting of untold service in Christ's name to our young men.

For the past two or three years our Association leaders in educational work have come to feel more and more the necessity for greater definiteness and more unity of effort, and the establishment of a standard—of what should constitute a practical applied knowledge of a subject—toward which all Associations could aim, and thus enable careful, regular, and systematic work to be done. The first public expression by the Associations in this direction was at the Springfield convention last year when a resolution was unanimously adopted asking the International Committee to prepare and present a plan to accomplish the desired object. After much thought, prayer, and study of various means, the following scheme was suggested:

- (1) The submitting of a syllabus or outline of a definite amount of ground to be covered in a subject.
- (2) An annual examination on the topics embraced in this syllabus or course.
- (3) Granting certificates to students successfully completing the examinations.

This plan was launched as an experiment with the firm belief that it was the best means at hand to reach the desired results. This was all done before our visit to Europe.

ENGLISH METHODS OF POPULAR TECHNICAL INSTRUCTION.

When in England I began to study the policy and workings of the City and Guilds of London Institute for the pushing of technical education throughout Great Britain. I found to my happy surprise that their plan as an organization for over five years consisted of (1) a syllabus or outline course covering a standard amount of work in each one of the eighty-five subjects offered; (2) holding all over the Kingdom in May, annual simultaneous examinations in each subject based on the work outlined in the syllabus (this year over 100,000 students took these examinations); (3) granting diplomas and prizes to individual students successfully passing the examinations, each student having to pay for his diploma. In addition this organization, having the use of Government funds, pays to each local school or association giving instruction to the students who gain certificates a certain amount of money, based upon the result of the examination. Aside from the latter or financial feature, this plan will be seen to be in general identical with that started by the International Committee.

When I investigated the plan, policy, and operation of the Society for Advancement of Commercial Subjects, which has been in operation for forty years, I discovered (1) an outline course of study consisting of simple topics, and called a syllabus, presented year after year; (2) annually on the same day in March examinations held in each subject throughout the country, and (3) successful students, on payment of a certain fee, received certificates. During the past year over 25,000 certificates were granted. This latter organization differs from the former in that it gives no money to the local field, corresponding in this respect with the international committee.

Again, when I came to study the work of the science and art department of South Kensington—an organization forty years old (now governmental) for the encouragement and extension of science and art subjects—imagine my satisfaction to still find the threefold plan (1) a syllabus describing a definite number of topics and the ground to be covered in fifty different science and art subjects; (2) simultaneous examinations held annually in May, in 1,500 places and for over 200,000 students, in Great Britain and Ireland; (3) certificates granted to successful students, each student having to pay in advance from 50 cents to \$3 or \$4 for the privilege of taking the examinations. (If he fails to pass the examination he loses his money.) This last organization, like the first, gives money to each local center, based on the number of successful students that have been there prepared for the examination.

Here are three powerful organizations—two of them of forty years' growth—which have been laboring for the encouragement of evening school work, and whose plans, policy, and growth have brought them to the position of absolute control and direction of both evening and day work in all industrial and technical schools, and to the indirect control of all public elementary school day work. These plans, together with the public appreciation of evening school work by all, are the direct cause of the phenomenal growth already referred to. To find that the general plan and policy of all these societies with their enormous work was exactly the same as that of the international committee, which was planned without the knowledge of these systems in England, was very gratifying, and served to convince us that indeed the committee had been providentially directed in the course pursued.

In England these three organizations, each covering its own field of subjects, work harmoniously together to encourage and increase the efficiency of practical education. There is as yet in America no similar organization effecting this much-needed work, establishing a standard, and in an inexpensive, systematic manner improving and rapidly extending to all the beneficial results of evening facilities. This door of opportunity and Christian usefulness is open for the associations of this country to enter. By adopting and pushing this plan of the committee, which we see has in England forty years of successful experience behind it, the associations can take without question the most important step for the establishment of a recognized standard of evening school work that has been taken by any organization in America. Shall we do it, and thus in the name of Christianity begin to unify the straggling, disorganized, indefinite work that is being done both inside and outside the association?

As soon as the beneficial results from the definite and standard work begin to appear in our own schools, other schools will begin to imitate, and thus bring the association into a much more important position of usefulness than ever before. Who can measure the opportunity in this direction? Yet if we halt or falter we will be as surely shut out of this field as have been our friends of the English associations by a similar neglect of opportunity.

A FORWARD STEP IN THE EDUCATIONAL WORK OF THE Y. M. C. A. ASSOCIATIONS.

In pursuance of their plan for developing the educational features of the Associations The International Committee have recently devised courses of study which are to be used in all the evening schools of the Young Men's Christian Associations throughout the country; and have provided further that the standards in the several schools shall be kept up to a given average of excellence by requiring annual examinations to be held simultaneously, in all the classes, in April of each year.

To those students who pass a satisfactory examination, certificates are given; which, by the Association Training Schools in Springfield, Massachusetts; and in Chicago, Illinois; and by the Pratt Institute, Brooklyn, New York; will be accepted in lieu of entrance examinations.

A pamphlet giving an account of this new departure and containing the "outline courses" of study in the ten different subjects which are included; with the regulations, provisions, and special instructions, for the annual examinations, was issued in 1896.*

The following extract gives the names of the authors of the outline courses. A list of a few of the best text, and reference books, relating to each subject, follows each syllabus as given in the "Prospectus."

The syllabi, or outline courses, herein presented were prepared under the direction of the following gentlemen; each of whom is an authority on his special subject:

H. W. Mabie, *The Outlook*, New York.

T. M. Balliett, Superintendent of Schools, Springfield, Massachusetts.

F. B. Schenck, President Mercantile National Bank, New York.

H. B. Adams, Johns Hopkins University, Baltimore, Maryland.

W. S. Perry, Director Art Department, Pratt Institute, Brooklyn.

A. D. F. Hamlin, School of Mines, Columbia College, New York.

C. R. Richards, Director Department of Science, Pratt Institute, Brooklyn.

D. F. Graham, Educational Department, Association Training School, Springfield, Massachusetts.

Edwin J. Houston, Consulting Electrical Engineer, Philadelphia.

Luther Gulick, Director Physical Department, Association Training School, Springfield, Massachusetts.

* 688. *Prospectus for 1896*. Containing syllabi or outline courses in Arithmetic Book-keeping, Civil Government, Architectural, Mechanical and Free-hand Drawing, English, Carpentry, First Aid, and Electricity; the regulations governing the International examinations, suggestions, etc 15c

THE INTERNATIONAL COMMITTEE OF YOUNG MEN'S CHRISTIAN ASSOCIATIONS,
40 East 23d street, New York City.

IX.

THE BROOKLYN EXHIBITION OF WORKS OF ART SUITABLE FOR THE DECORATION OF SCHOOL ROOMS.

In the first chapter of Part II. of the present Report, (see pages 3 to 12,) and in the opening paper of Appendix "K." of Part II. (see pages 713-731), are given accounts of some early movements by Art lovers to introduce in School Rooms works of Art; both for the adornment of the bare walls, in the hope of appealing to, and awakening, the love of beauty in the children, and, also, to serve as aids in the general purposes of education and culture.

The first notable effort in this direction was made in Boston, Massachusetts, by the same circle of public spirited Art Lovers who, in the same year, (1870), of their experiment of placing classic casts in the Girls' High School,—began the creating of The Boston Museum of Fine Arts. The late lamented citizens Charles C. Perkins, Esq., and John Dudley Philbrick, LL. D., were prominent in this movement for putting Art in School Rooms. The account of this charming experiment, and of some sporadic efforts in a like direction in other cities, and in one or two of the leading colleges for women; as well as the Report, in 1883, of a Boston Committee, reciting similar efforts in France and England, and an interesting paper on this topic, read in 1884, by Mr. T. C. Horsfall, of Manchester, England; with reviews in the Manchester Journals of an exhibition of works suitable for such adornment of school buildings, held in Manchester, in 1887; will be found in the volume as above stated. The admirable paper by Mr. Horsfall, with the report of the interesting discussion which followed the reading of the paper, will be found worthy the attention of all who are at all interested in this topic.

The remarkable development of Art processes which now enable reproductions of paintings, engravings and photographs, to be made at trifling cost, has revolutionized the whole business of illustration; and placed at the disposal of publishers, and of educators, such facilities as but a few years since had seemed incredible.

Views of cities, seas, mountains,—whatever of the earth's surface, or of mans constructions, enters in to the studies of Geography, History, Architecture, or Art, can be had at trivial cost; and the student of to-day has opportunity of forming correct impressions from actual reproduction of the scenes and works referred to in his authorities. The very commonness of such material may tend to make the said student of to-day indifferent as to its value; but to those who passed their school lives with no such aids, the present opportunities seem almost fabulous. Apart from the aesthetic value of Art reproductions as ornaments, which was at first the special object of introducing works of Art in school rooms, their uses in illustrating the various subjects of study, are invaluable, and have led me to these few words.

The recent holding in Brooklyn, New York, of an Exhibition of works of Art designed for the Decoration of School Rooms, has led

to this reference to the account of this movement as given in Part II, of this Report, as well as to the inclusion of a brief reference to this exhibition in this Appendix.

A very handsome catalogue of forty pages, with six full page illustrations comprising the following subjects: "The Land of Philae," "The Roman Forum," "St. Marks Cathedral," "The Winged Victory of Samothrace," "Holy Family by Murillo," and the Bronze Statue of "Joan of Arc, by Paul Dubois,"—was issued.

This had on the title page, an engraving in little, of "The Winged Victory," and the following Title: "An exhibition of works of Art suitable for the Decoration of School Rooms."—"Under the direction of the Section of Art Education of the Brooklyn Institute of Arts and Sciences—March the twenty-first to April the fourth Eighteen Hundred and ninety-six. At the Art Galleries One Hundred and Seventy-four Montague Street, Brooklyn, New York."

The catalogue contained 412 several entries; comprising Photographic reproductions, Engravings, Etchings, Original Drawings, Plaster Casts of famous Antiques, Collection of "Rookwood Pottery," Collections of Pottery and Porcelain, cases of Pottery—Examples of Japanese paintings, drawings, and pottery.

These works were loaned by various Dealers, Publishers, and private art collectors. Against such articles as are purchasable, the prices were given, ranging from fifty cents a piece, to seventy dollars. The collection must have been very complete and suggestive, as it embraced examples from nearly all the kingdoms of Art.

The catalogue was prefaced by the following statements, by Professor Walter S. Goodnough, Chairman of the "Section on Art Education," under whose auspices the exhibition was held, in which he credits the English society, led by Ruskin, with originating the movement; but, it seems to me, that those devoted lovers of Art and of Schools, Messrs. Perkins and Philbrick, should have credit for their initiatory movement in Boston, which preceded the English movement by a dozen years.—

However, there is no worth in mere contentions for priority;—possibly, the bashful, bare foot country boy, or girl, who first timidly offered to the District School Mistress,—a little bunch of roses, pinks, or, it may be, dandelion blossoms, gave the suggestion of putting something of beauty within the bare rooms of City schools;—at any rate, this universal capacity for love of beauty, continually appeals,—and eventually not in vain,—for recognition.

Professor Goodnough thus tells of the purpose of this Exhibition:

A FOREWORD.

The purpose of this exhibition is to bring to the attention of educational authorities and the public of this city and vicinity a most important educational movement, destined to have great influence. It originated in England in 1883, under the leadership of John Ruskin, and extending to this country has been taken up enthusiastically in many cities. A fuller report of this movement will be made in print later, by the section on art education of the Brooklyn Institute. This exhibition is intended to be suggestive, not complete or exhaustive, of works of art suitable for public schoolrooms of all grades.

In other cities public funds have not been drawn upon, except to the extent of providing picture mouldings, and suitable colored walls, ceilings, and woodwork. Works of art have been loaned or presented to the schools by alumni associations, graduating classes, friends or patrons; also by civic or educational societies, art clubs or associations, and other organizations interested in the social progress and well-being of the city through the proper education of its future citizens.

In Boston, the Public School Art League, with the consent and cooperation of the

board of education, decorated several schools. In Philadelphia, the Civic Club purchased works of art for and decorated a school selected by the board of education.

In Chicago, St. Louis, Cambridge, Salem, Brookline, New Haven, and numerous other places, much has been done. It is hoped that public-spirited citizens and organizations will aid and support this movement in Brooklyn.

The day is not far distant when all bare, white walls in the schoolroom will be replaced by pleasing tints and works of art; originals or acceptable reproductions will hang upon the walls, or find place in cabinets or cases provided for this purpose.

A recent writer asks, "How shall our life, public and private, be raised to a higher plane? What better means can be used to inspire patriotism and chasten private life than the influence of those arts which embody the ideal? Where can this influence be exerted so well as in the public school? In youth the mind is most open to the nobler influences; impressions then formed are most lasting." "Surround young people during school hours with pictures and statuary, set off by tinted walls and decorated ceilings, and the silent beauty irradiating therefrom will quicken and purify the taste without encroaching upon school time." "Art in daily contact with life is a silent but all-powerful and ever constant and undying influence in the shaping and moulding of character. It will do more for refining, elevating, broadening and even tempering of character than all other forces combined, except religion, and when art and religion have both been true, the one has helped the other. Without true art no nation has been, can be, or will be great, and as the twig is more easily bent than the trunk, the process will best begin with the young."

"The public school is the place to which we should turn chief attention in our effort to promote a more beautiful public life in America. The schoolhouse and grounds should be beautiful, and the child should be surrounded by beauty in the schoolroom from first to last."

Art education is a primary part of true industrial and of spiritual education. Every school should teach the pupils, and through them the people, that everything that man uses of wood or metal or stone, of wool or silk, printed, woven, or wrought, should be beautiful; and it should provide means for the development and exercise of the creative faculty with which all are endowed, and which brings man into his highest estate. "If we can once give beauty its rights in the schools, we shall have done the greatest thing which we can do towards securing for our people a more beautiful public life."

"The good, the true, the beautiful," were words the Greeks loved to use. As we open our eyes to see the beauty of God's earth, and sea, and sky, so let us be content only when we see beauty, too, in all the works of our hands—in the home, the school, the shop, the street."

The school wall should speak of the ideal to the eyes of the child. The drawing, engraving, etching, photograph, photogravure, the cast, the product of the potter's skill, and of the art worker in stained glass and in metal, will play a larger part in elementary education in the public school of the future.

As a means of making more real the great events and facts of history, literature, science, and art, as well as for the purpose of bringing greater culture, refinement, and more civilizing influences into the schoolroom, of cultivating an appreciation and love of the beautiful, and of educating the æsthetic and emotional nature of the child, good art works have an untold value. We endeavor to acquaint the pupil with the great masters and masterpieces in history and literature. Should we not do the same in art, when photographs and other reproductions can be had at so small a cost? Should we not bring beautiful form and color into the schoolroom, when good art in the form of pottery is so plentiful and inexpensive?

The section on art education will receive contributions of funds or art works for this purpose, and will endeavor to carry out the desires of donors. Works in this exhibition, with some exceptions, may be bought and presented to any particular school, or be placed in the hands of the section on art education, to be placed in some school, either as a loan or a gift. Receipts from the sale of the catalogues will be used to purchase works from this exhibition, to place in Brooklyn public schools.

All passes; Art alone
Enduring stays to us;
The bust outlasts the throne,
The coin, Tiberius.

W. S. G.

The quotations, accompanying the thoughtful words of Professor Goodnough, as to the value of the influence of these art works in the schoolroom, suggest that sometimes, in their enthusiasm, the advocates of the introduction of objects of beauty as means of education and culture, may unwittingly exaggerate the importance of their influence.

If these mere objects of man's devising *are* gifted with such magic power to give sight to the else unseeing eyes, to awaken the hitherto unknown realization of the beauty of form and of color, to re-create for the child the ruined cities of antiquity, and to open his intellect to the comprehension of the power of the great masters of art,—some reproduction of whose paintings and sculptures adorn the wall before him;—why, and how is it, that the grander forms and subtler hues of Nature which, from earth, and sea, and sky, from tree and flower, from mountain cliff and meadow stream, from roseate cloud splendors of sunrise and sunset, and from the sombre starry vault of night,—ever appeal,—with their countless phases varying with each revolving hour,—to every human soul, and yet, so often, in vain?

I am not unmindful that there is another side to this question—eloquently set forth by Robert Browning, in the plea for Art which he thus puts in the mouth of Fra Lippo Lippi:

“For, don't you mark? we're made so that we love
First when we see them painted, things we have passed
Perhaps a hundred times nor cared to see;
And so they're better, painted—better to us,
Which is the same thing. Art was given for that;
God uses us to help each other so,
Lending our minds out.”

Nor am I forgetful of the fact, that in the shut-in-streets and noisome slums of crowded cities, it often may happen that the young children have never seen the common things which are so familiar to the country bred child. Therefore, to such city waifs, shut out by many storied buildings, from the vast open spaces of sky and fields, and the grand sweep of mountains and forests;—whose only ideas of the products of gardens and orchards come from the wilted vegetables and fruits on the green-grocer's stands;—the simplest pictures of domestic animals, of common fruits and flowers, of growing plants and trees, of hills and valleys, of meadows and forests, of the farm house with its group of outbuildings, the whole scene enlivened by the circling flight of pigeons and the little companionable broods of chickens, turkeys and geese which seem indigenous to farm life;—with the young of the domestic animals, so attractive to children, the pigs, calves, lambs, and, most prized of all, the frisky spirited colts; these objects, so common to country children as hardly to be consciously noticed by them,—may well be, to these unwonted pariahs of the city, a revelation of beauty, and of creative power, such as would indeed seem almost incredible to eyes long wonted to these familiar sights, and to attention dulled by custom to any perception of the attractions of such common objects.

It is in this direction, and by means of graphic illustrations, hardly within the category of “Art,” that much may be effected in awakening, in these children of the city, some comprehension of the living world outside the paved streets and crowded buildings of their immediate surroundings; so that the words descriptive of these common country scenes, may begin to have some meaning for them.

This awakening to a knowledge of the simple universal facts of the world's daily life, must inevitably precede any possible comprehension of Art in its relation to Ideal Beauty; or, to Classic History.

It must be kept in mind that the school rooms in which we are purposing to place these art objects are, most of them, mere elementary schools, where young children, ignorant not only of art but of most other things, are gathered together, and one might as well expect

that a person ignorant of books, and with no power to decipher print, might be suddenly made educated by being placed alone in a library, as to suppose that the mere hanging an engraving, or photograph, on a wall; or putting a cast, or a vase, on a shelf; would, in itself, awaken that interest which comes only from knowledge—that recognition of beauty which implies that it is a familiar. No! unless the teacher, who presides in the school room in which it is proposed to place these objects of art, comprehends their latent power of inspiration and far-reaching suggestiveness, and has the knowledge and personal magnetism to arouse the interest, and awaken the intelligent appreciation of the child, to the import of these unfamiliar objects; the empty walls might as well remain as they were.

And, *with* such a teacher, the simple flower brought by some child, may have more than magic power to unseal the hitherto blinded eyes, and to reveal, to the wondering children, the beauties with which Nature on every side surrounds them. When once such miracle has been wrought, life can never again be barren of beauty.*

There is another suggestion, and that is, whether it is the best way to use objects of art, educationally, to have them always before the eye. Whether the Japanese are not wiser than we are in this, since they are said to keep their beautiful objects in store rooms, bringing out a single *Kakemono*, or Vase, for a few days to be seen by itself, and then, after a little, replacing it by another, to be in turn displaced; so that the eye never becomes wearied, or so familiarized by any one article, as no longer to note with interest the beauties which give a charm to the object. And this suggests a practical method by which it may be quite possible, with no excessive individual expenditure, for all the schools and school rooms of a village, township, or section of a city, to own in common, a varied collection of suitable art objects; some of which should be placed in each of the schools comprised in the circuit, and which should be changed at rather frequent intervals; each small collection being sent from school to school, in turn; while it should be the duty of the teacher, when the changes are first made, to direct the attention of the pupils to the newly placed objects, and to instruct them concerning them. It would be quite feasible, also, that each school should possess some few permanent pictures, or casts, which, beautiful in themselves, should come to be delightful by long association. So that the two faculties of mind should be availed of—the curiosity as to a novel object, and the familiar knowing of, and attachment to, an accustomed thing. Some such plan of circulating art collections as above suggested, was followed in Manchester, England, where a society,

*In this connection I am glad to be able to call attention to two recent publications, which, to my regret, have come to hand too late for fuller notice in this volume. One, is the charmingly suggestive and practical paper, which I would have liked to give in full in this appendix, read before the Art Department of The National Educational Association, at Buffalo, N. Y., in July, 1896, by Miss Stella Skinner, Director of Art Education, New Haven, Conn., which is given in the October-November number of "Art Education," New York. This paper, entitled "Art in the Schoolroom through Decoration and Works of Art," can hardly fail to be of real value to those teachers who take interest in the object of this "Brooklyn Exhibition." The other, is a beautifully printed pamphlet "List of casts and Pictures, suggested for the first eight years of school; with special reference to the general course of study in these grades." This list, which fills twenty pages, was compiled by Miss Skinner, and Miss Webster, the principal of one of the city schools, with special reference to the needs of the New Haven schools. School Superintendent C. N. Kendall, contributes a few introductory words.

sent loan art collections to several schools in turn. The plan admits of various modifications, and seems capable of indefinite expansion; and of doing good service in many ways educationally.

In assuming, as some enthusiastic advocates for Art seem to do, that a knowledge of, and love for, the beautiful, is, in itself, a gospel of morality, and a true religion, capable of transforming the nature of man and of obliterating all evil, one, mindful of cities of old, and of some in our own time, noted for the love of art, and the worship of mere beauty, may be excused for suspecting not only exaggeration on the part of those who hold to this estimate of Art, but a total misapprehension of the essential meaning of such words as 'morality,' and "religion"!

It is well enough in view of such hysteric worship of Aesthetics, to remember *why* it was, that our Puritan ancestors revolted from the statues, paintings, and stained glass of the cathedrals and churches, which, in their judgment, worldly priests and licentious nobles had profaned by their profligacy.

A knowledge and love of art, and a quick perception of the beautiful, both in the works, of man, and in those of the Divine Artist, are, indeed, desirable; but honesty, purity, high thinking and true living are more precious; and have power to gladden the lives of those wholly ignorant of, and indifferent to, Art. To say, or think, otherwise is to confuse all ideas of right and wrong, and those who thus exaggerate the importance, and misapprehend the mission, of Art; do it, and themselves, grave wrong. Let us by all means have the best of art in our schools, and in our homes, and our public buildings. But he must be a shallow student of history who expects the love, the knowledge, or the exercise, of Art, to be, solely by itself, potent in the development of private or public morality;—and many words that have been uttered and published on these lines are, to say the least, wholly misleading. The arguments in favor of a general knowledge of elementary art; of drawing in all its branches, and of the value of art works in illustration of various school studies, are sound, and have been sufficiently set forth in various places in this Report; and, certainly, there need be no mistake, by any of the readers of his first volume, as to the present writer's estimate of the power and the value of Art; or of the importance of the true artist in the development of the civilization and refinement of a people.*

There seems, also, an undue emphasis on the value of mere beauty; as if to achieve "the beautiful", was the only aim, or goal, of the artist's, architect's, or poet's, endeavors.

So far is this from being true, that it is questionable whether the surest way to failure in the effort to capture the elusive spirit of Beauty, would not be its *conscious* pursuit! The search for *truth*, is the guiding purpose of the true Artist. When the inspired Master of Barbazon, set himself to depict the hard lives of the homely toil worn peasants,—bent in the potato field, or, standing for a moment in reverent silence to catch the music of the bells sounding the Angelus from the village church spire;—When the artist brother of the Convent San Marco, knelt, rapt in prayer, before taking his brush to portray the forms and features of his angelic visitants; when Perugino, reverently drew those fair haired Madonnas, whose holy simplicity stirred the artist soul of the boy Raphael by his side;—each

* See series of essays preceding the Report proper in "Part I." of this series of Volumes in this Report, pages xxxi-cclviii.

wrought in obedience to some higher purpose than that of merely making some beautiful work.

It was in protest against this vulgar error as to the purpose and mission of Art, that, a generation ago,—the “Pre-Raphaelite Brotherhood” wrought;—to the amazed perplexity of English “Philistia.” It is in like obedience to the underlying law of Art, that, in our own day, the youthful “Impressionists,” arose; to be quickly followed by the “Symbolists.” It is easy to see that, in their headlong enthusiasms, these fiery protestants of Art, somewhat outran their goal;—nevertheless, their movements were based on the perception of a profound truth.

But we are wandering far from this Brooklyn Exhibition of Art for School Rooms which has proved such a prolific text. The names of those public spirited citizens of Brooklyn who, as officials of the Institute, are promoting this movement, follow the brief notice of the ceremonies at the laying of the corner stone of its new building. “The Brooklyn Institute of Arts and Sciences,” is a many handed Briarius, working in many ways for the welfare of all. An account of this admirable institution will find place in a later volume of this Report.

Meantime, a brief statement of the ceremonies inaugurating its latest undertaking;—the erection of a new home,—condensed from the accounts given in the New York City Journals, of Sunday, December 15th, 1895, which were illustrated by an engraving of the proposed building, follows.

LAYING THE CORNER STONE OF THE NEW BUILDING FOR THE INSTITUTE OF ARTS AND SCIENCES TO BE KNOWN AS THE BROOKLYN MUSEUM.

On the afternoon of Saturday, December 14th, 1895, with formal ceremonies, the corner stone of the grand edifice which is to serve the varied purposes of the Institute was laid, in the presence of a distinguished audience. The site, with ample grounds for the vast building proposed, sections of which are to be built from time to time as needs arise,—is on the Eastern Boulevard, facing Prospect Park, and occupies a commanding position. The facade of the building is in the Greek style. One wing is partly erected; this will have a frontage of 191 feet on Eastern Parkway, and will be 71 feet deep. This will accommodate temporarily the Art Collections.

A. Augustus Healy, President of the Institute, presided on this occasion. The Hon. Charles A. Schieren, Mayor of the City of Brooklyn, officially “laid” the corner stone. Rev. Charles R. Baker, made the opening prayer and the Rev. Sylvester Malone, the closing prayer and pronounced the benediction.

Addresses were made by the Mayor, President Healy, Professor Franklin W. Hooper, Director of the Institute; the Rev. Dr. R. S. Storrs, Hon. St. Clair McKelway, representing the State Board of Regents; and President Low, of Columbia College, representing the Educational Institutions of the City of New York. Rev. John W. Chadwick, of Brooklyn, read an original ode.

President Healy, spoke opening words of welcome, referred to the development of the Institute in the past, and said, speaking of the building now begun: “Never had public edifice a fairer site or an architectural design more noble and beautiful. We have avoided the mistake, so often made, of providing only for the present needs and early future growth of the Institute.” He then drew a glowing

picture of its future development as it should keep pace with the growth of the city and of the country, and prophesied that eventually it would become one of the grandest museums of the world.

Director Hooper, spoke of the threefold purposes of the Institute, educational in its several directions.

The eloquent and scholarly Dr. Storrs, First Vice President of the Institute, then delivered the formal oration. He recalled the fact that the first "corner stone" was laid by General Lafayette, July 4th, 1825; when the institution was known as "the Apprentices Library." In 1843, it was provisionally housed with the Brooklyn Lyceum, which was organized in 1833. The two organizations were combined in 1843, under the corporate name of The Brooklyn Institute. On July 4th, 1848, the society moved into the granite building, in Washington Street, given by the late Augustus Graham, who, on his death in 1851, left an endowment of \$27,000 for the maintenance of free scientific lectures.

Dr. Storrs, was followed by Hon. St. Clair McKelway, who most eloquently urged the educational duties of the State. Among other incisive words, he said: "I have grown into a believer of the duty of the use of the taxing power for all educational purposes for all the people. The right of the free school holds in it for me the right of the free college, the free university and the free institute."

President Low, of Columbia College, formerly Mayor of Brooklyn, was the last speaker. After expressing the cordial interest felt in the success of the Institute, by all educational institutions in the City of New York, he said: "In some respects I think the work carried on by the Brooklyn Institute of Arts and Sciences during the past few years has been the most successful and the most interesting work of popular education that has been done in the country."

At the close of President Low's remarks the whole audience joined in singing "America"; after which, the benediction was pronounced by Father Malone.

LIST OF OFFICIALS OF THE BROOKLYN INSTITUTE OF ARTS AND SCIENCES (1896).

[Founded 1824. Reincorporated 1890.]

Officers of the Board of Trustees.—A. Augustus Healy, President; Rev. Richard S. Storrs, D.D., LL.D., First Vice-President; Hon. James S. T. Stranahan, Second Vice-President; Prof. Franklin W. Hooper, Director; Hon. Felix Campbell, Treasurer; William H. Maxwell, Ph.D., Secretary.

Officers of the Council.—Rev. Lyman Abbott, D.D., President; James Cruikshank, LL.D., Secretary; James Hamblet, Treasurer.

Section on Art Education.—Prof. Walter S. Goodnough, Chairman.

Committee on Decoration and Art Works for Public Schools.—Col. John Y. Culyer (Chairman), Prof. Wm. H. Goodyear, Mr. J. Frederick Hopkins, Mr. F. J. Boston, Mrs. Leroy F. Lewis, Mr. Robert J. Pattison, Mr. Percival Chubb, Miss Stella Skinner, Miss Emma Johnston, Mr. Wm. A. Campbell, Rev. W. H. Ingersoll, Miss Amy C. Reddall, Mr. Arthur W. Dow, Mr. Victor I. Shinn, Mr. W. L. Felter.

X.

TWO RECENT STATISTICAL PAPERS BY HON. WM. T. HARRIS, LL.D.

In view of the plan and purpose of the present Report, and the close relation which, of necessity, must exist between the elementary industrial training in the public school systems of the country,—to the extending of which it is the main purpose of these volumes to contribute,—and the educational and industrial development of the people; I am happy in being able to include in this Appendix, the two following thoughtful, carefully prepared papers by William T. Harris, LL.D., recently published, which clearly show the intimate relations which exist between the education of a people and their economic conditions.

Statistics, often the driest, least helpful of subjects, become, when intelligently and philosophically considered in relation to environment, a far reaching illuminating force.

More and more imperatively as the modern development of the world progresses, do the educational and economic conditions demand consideration.

The rapid dissemination of printed matter, now possible throughout all communities, affording, as it does, ample facilities for the irresponsible promulgation of erroneous statements; or, what is fully as injurious, mistaken deductions from true statistics; creates a new danger for the body politic. The present era witnesses great activity in Europe, and in this country, on the part of those who affirm that the wonderful progress of invention and industry, with the consequent increase of production, which characterizes our day, avails only to give to individual capitalists, and to the Rulers of the State, the means for the increased oppression of the people. The aim of these agitators seems to be to array in hostile camps the capitalists and the workers. To organize humanity into bodies of armed contestants; and to preach, instead of the Gospel of Love and good will, the doctrines of hate, envy, and all uncharitableness. All of which, however, is done in the name of Humanity with a large H.; and, professedly, in the interests of the "people," spelled always with a large P.

The assertion that "the Rich are growing richer, and the Poor, poorer" is so commonly emphasized by orators and authors,—who, instead of investigating for themselves, indolently accept any statement if only authoritatively uttered,—that this oracular untruth is in danger of being thoughtlessly agreed to, as a legitimate axiom, by their several audiences.

It might be well for those who incline to accept the assertions made by these Slanderers of the Present, to take the trouble to read the little apologue, written by Hans Christian Andersen, a half century, or so, ago, entitled "The Wonderful Goloshes," and learn for themselves how far the world, spite of these critics as to its present unendurable conditions, has really progressed towards the enjoyment of a higher average of comfort and happiness by all the people. In this suggestive fable, our author quaintly tells how a grumbler of that day, after an evening passed in the comfortable home of his

friend and fellow citizen in Stockholm, puts on, when leaving, the conveniently imagined "goloshes";—(which have the magic power of instantly placing their wearer in whatever place or condition, he may happen to express a wish for)—and steps into the street; to suddenly find himself, unwittingly, in the Stockholm of two centuries before! The horrible condition of the noisome, undrained, unpaved streets, then universal; the mean aspect of the straggling, humble, poorly lighted houses, doubly repellant as contrasted with the clean, well paved streets, the handsome gas illumined buildings that lined the stately avenues of the City he knew, and all the surrounding comforts of his own times which he had so reviled as worse than that imaginary Past, whose bareness and discomforts he now first realized; soon brought him to his senses!

The contrast so ingeniously shown between the past and present in the city of Andersen's own day—now some fifty years or so ago—is doubly realized in our own world of to-day; in which the wonderful developments, throughout the western world, in the methods of lighting and paving the streets of towns and cities, the growing facilities for rapid transit both in town and country, as well as the improved construction of buildings, and the continuous invention of ingenious conveniences in the homes of the people, add so materially to the usefulness, comfort, health and happiness of our daily lives; and are shared, in greater or less degree, by the poorest as well as the richest citizen.

The penniless wanderer in the city streets of to-day, enjoys comforts, common to the public, which Queen Elizabeth, in the plenitude of her power, could not have commanded; while the homes of the average mechanics have more of the essential requisites for the health, convenience and comfort of their inmates, than was common in the palaces and castles of Royalty and the Nobility throughout Christendom, a few centuries ago. The whole Community has been lifted up by these improvements in the machinery of living, and all are benefitted.

The universality of the benefits resulting from the modern developments of civilization, is evidenced by the persistent steady increase in the average duration of human life which has characterized the last few decades.

This is due partly, doubtless, to the increased plentifulness and consequent cheapness of food, making fuller nutrition possible; as well as to the better housing and more comfortable clothing of the masses, it is, also, largely due to the cessation of those wide extending epidemic contagions of disease, so common in previous centuries; such as Smallpox, Typhus, and the "Black Death," the results of starvation, overcrowding of population in places and consequent pollution of soil and of water, combined with appalling universal ignorance and consequent violation of sanitary laws and conditions.

These pestilential horrors swept, from time to time, over the continents; desolating vast regions of country and depopulating crowded cities.—Calamities whose terror and vastness is fortunately unknown to this century, but which are vividly portrayed in certain master pieces of literature accessible to the readers of to-day, which describe the horror and desolation, of the plague-stricken cities of Athens, of Florence and of London.

In these immunities of our modern life,—the direct results of increasing knowledge of the laws of hygiene, and of the growing comfort of the life of the people, the latter made generally possible

by the rapid increase of wealth available for Communal, as well as individual uses,—are to be found the crowning glories of the Nineteenth Century. Is it not more profitable to study the conditions of the Past, to note thereby the wonderful improvement in the general living conditions of to-day, and to rejoice in the production of the wealth due to industry and thrift, which has made possible the general dissemination of these results of growing intelligence, and which, each year, add to the general comfort of all the people, while its security of possession and of increase, promises an ever brightening future for the Community; than to seek to rouse, in the hearts of those who have less of individual possessions than some others, a hatred and envy, which longs to rob the rich, to pull down the industrious, and to reduce all humanity to a dead level;—under the plea of an equality of rights?

In thus briefly suggesting something of the advance of the Present over the Past in much that relates to the machinery of life, there is no purpose of unduly exalting the Present. Evils enough are left in every community, to arouse the sympathies and stimulate the efforts of all well wishers of their race.

Doubtless, in numberless instances, those who outcry against existing institutions, have been roused to indignation by the knowledge of iniquitous conditions; by the sight of poverty, suffering, and injustice.

In the evolution of civilization the advance is irregular, here an outpost of barbarism is carried, there, an old superstition, or a tyrannic custom inherited from a feudal age, is happily done away with; but often, the advance seems, to impatient observers, to be checked if not abandoned.—

To the present generation of free-born Americans, brought up in the free schools of the people,—the barest statistical statements of the actual conditions of the peasants and people of France, in the years immediately preceding the outbreaks of the French Revolution, seem as unreal and incredible as the wildest vagaries of Munchausen; yet the historian knows of their pitiful truth. It is not strange then that, in the various countries on the continent of Europe, evils inherited from century old conditions may prevail, which individual protestants rise up to combat. In this happier land, for two centuries, we tried the experiment of self government under most favorable conditions; within the past few decades we have jeopardized this costly experiment, by admitting to all the powers of citizenship, multitudes who have had no training to fit them to become intelligent citizens of a free Republic, other than such as has come from being crushed under feudal traditions and customs; or, such as individual slavery gave. Against the errors to which both of these classes of citizens are liable, we have no defence, save in the general education of the children;—the free public school, with its corollary a free press.—The theoretical socialists, anarchists, *et id omne genus*, have no legitimate place here; though they were the logical outcome of Past Tyrannies. Here, however, they find opportunity to freely promulgate their theories. In the view of their denunciations of all rights of property and of their myriad schemes for the future, it has seemed not wholly unprofitable to note the rapid advance of the world, during the last fifty years, with the rights of personal property respected.

To aid the ignorant to the possession of the keys of knowledge, to teach the idle how best to become industrious, to develop in all the

love of, and capacity for, work, in ever higher forms of employment; and to show how the true happiness and prosperity of each one, is ever dependant upon the happiness and prosperity of all; these are noble purposes which may well claim the devotion of life long service.

It is an inspiration to realize how, all over the world, devoted men and women are freely giving themselves to these unselfish ends; So Life brightens and broadens as the years pass, and so Humanity climbs ever higher and higher towards the Perfect Day!

In the following paper, read at Atlanta, Ga., before the National Congress of Educators, Dr. Harris, gives a striking picture of the wonderful efforts made and gratifying results effected by the people of the Southern States, in their self-sacrificing endeavors to secure, for the children of both races, the advantages of education.

Side by side with his account of these educational efforts, he depicts the remarkable increase, during the same period, that has taken place in their material resources; thus showing how the education and prosperity of a people go hand in hand.

(a.) WHAT THE SOUTH IS DOING FOR EDUCATION AND WHAT EDUCATION IS DOING FOR THE SOUTH.*

[By Dr. W. T. HARRIS, U. S. Commissioner of Education.]

IN the past twenty years the South has increased 54 per cent in population, but its school attendance has increased 130 per cent, that is to say, more than twice as fast as the population. This means that there is a larger proportion of the population kept in school during the year; while in 1874 an average of 14½ out of every 100 were enrolled in school, ten years later (1884) the average had risen to 18½ per 100, and in 1894, or twenty years later, the number enrolled is 22 in 100. Of all the people of the South, white and black, one in five is in attendance on school for some portion of the year. This is a large proportion of the people to be in school. Even in Saxony, which excels all countries of Europe in its school enrollment, the per centum in school is only 20.

Even after making allowance for the fact that the South has a larger proportion of children in its population than any other section of the nation, this remains a wonderful showing for the wisdom and self-sacrifice of the Southern people. They are, indeed, building a "New South" and its corner stone is the school.

This appears in a stronger light if we take into consideration other statistics. In the twenty years from 1874 to 1894, the value of school property increased from sixteen millions to fifty-one millions of dollars—an addition of forty millions, or two millions a year. It built better school buildings and adopted modern improvements to such an extent that while in 1874 the average value of a schoolhouse in the South was only \$373, in 1894 the value had risen to \$643.

In the twenty years the average wages of the teacher have increased nearly 16 per cent.

Higher education has also a good record. It did not have so far to climb as the elementary schools for all classes of people. But while in 1874 the number of college students for the South numbered 10,103, in 1894 the number is 25,304, or two and one-half times as many.

STATISTICS OF RACE EDUCATION.

Turning to the important subject of race education, we find that the statistics are still more to the credit of Southern statesmanship.

In 1876, the South had an enrollment in its schools of 571,506 colored children and 1,827,139 white children. This was a good start for that time; more than half a million colored children were in actual attendance on school for some portion of a year. But in 1894—eighteen years later—the white pupils had increased to 3,835,593, while the colored pupils had increased to 1,424,995. The increase of white pupils for the eighteen years was 109 per cent, while that of the colored was 150 per cent. Twenty-three out of every 100 white inhabitants are enrolled in school, and 19 out of every 100 of the colored inhabitants.

It is true that with this fine showing as to numbers, the length of the school term is not yet up to the average. The average number of days in which schools are taught is, for the whole nation, 139 days, while the average number of days for the

* Read at the National Congress of Education, Atlanta, Ga., October 26, 1895.

South Atlantic division of States is only 106, and for the South Central division only 93 days. But the South had increased its school term 12 days. With the growth of cities and large villages, the length of the annual school session will increase, until it is quite as long as that of the North Atlantic States, or that of France and Germany. The city schools keep their doors open about 200 days. In the agricultural districts there is a winter session of 70 to 90 days, and in many cases a shorter summer session.

In the rural districts of New England, the school term was only 75 days as a usual thing, until the growth of large villages and cities with their ten-month schools finally created a public sentiment, which now insists on long terms for all districts.

The best device yet discovered to help the schools in sparsely settled districts is the payment of cost of transportation by the school committee, and the consolidation of districts. The children from outlying districts are brought to the town centre, where a large, well-graded school is kept up for 200 days of the year. The cost of transportation for the pupils living more than a mile away is not so great an item as the cost of furnishing teachers and school buildings for half a dozen pupils each.

In the small rural school, no classification can be attempted, and for the most part the pupils never get beyond the rudiments of reading, writing, and arithmetic. With good classification the city teacher can teach from forty to sixty pupils well. In the ungraded school not even sixteen to thirty pupils can be well taught.

This item explains how it is that in the South, with a great increase of expenditures, and with a much longer school session, the average cost per pupil is not materially increased. Twenty years ago it was \$8.40; last year it was only \$8.62. But the pupil receives now better accommodations, better instruction, and a longer school session than then, and the newly established training schools are sending in to the work thousands of professionally trained teachers.

WHAT HAS EDUCATION DONE FOR THE SOUTH?

The South has done all these things for education. But what has education done for the South? It has increased the productive power of the individual by nearly 50 per cent. It has produced a laboring class that can use machinery to assist the strength of bone and muscle. It has made possible the great change of vocations from the production of mere raw materials to the production of the finished product. This is a change going on in all civilized countries. The machine is coming in at one end, and the mere drudge is going out at the other. The uneducated, unskilled man is not needed, for his hands and muscles can not compete with the machine. But he is needed in the work of directing the machine. He is therefore called upon to step up from the occupation of the mere drudge to the occupation of the overseer of the machine. The change from hand work to brain work is a necessity. But this can not go on without schools that fit the pupils out with alert and versatile intelligence.

Even in the fertile fields of the South, unskilled labor does not bring good wages. The skilled laborer in the city, using tools and directing machinery, earns and receives an average of double the wages that the farm hand gets.

But machinery is going out from the city to the farm, and the farm, too, needs fewer laborers, and can furnish more productions. The surplus farmers must go into mechanical industries, into transportation and commerce. Fewer and fewer people are needed for the production of the raw materials of food, clothing, and shelter all the world over, thanks to mechanic inventions which are pushing the mere illiterate drudge out of his vocation. He must climb up or else starve in his attempt to compete with the machine.

SCHOOLS MAKE VARIED LABOR POSSIBLE.

Here is the wisdom that founds a school system. It makes possible a change of vocations among its people. It puts alertness and versatility in place of mere brute strength and persistency. More than this, the school puts aspiration and ambition into its pupils. It lifts the veil of distance in time and place, and shows them the achievements of the race. "You, too, can achieve the like." The school next proceeds to teach the sciences by which the wonders of the world have been accomplished—mathematics, the tool of thought by which matter is moved and forces are tamed into the service of man; history and geography and grammar and literature, by which man comes to know men, and gains the ability to combine with them in civilized effort.

HOW INCREASE OF CITIES LEAD TO CHANGES IN EMPLOYMENTS.

Hence arise cities over the South, ever growing in size and number. For the city is the necessary resort of the surplus laborers no longer needed on the farm. We do not need so many people to produce the raw materials of food, clothing, and

shelter, but we need more and more people to turn these raw materials into articles of comfort and luxury. We need more and more people to work at transportation and intercommunication. We need more persons in the work of giving culture to the rest. The savage tribe, unaided by machinery, can afford only one man for the production of ornament—nearly all are needed for the supply of food and clothing of the plainest sort. But the partly civilized tribe can afford ten persons for the production of ornament and luxury. The proportion increases rapidly as we ascend in the use of machinery, and the time is arrived now when more than a hundred in a thousand are needed for the production of ornament and luxury.

In transportation and intercommunication with railroads, telegraphs, postal systems, newspapers, books, libraries, schools, and churches—here the line rises from mere transportation through intercommunication up to culture. In these employments more and more will be needed.

HOW VARIED INDUSTRIES HELP HUMAN PROGRESS.

Instead of ninety-nine drudges producing raw material and one person working to furnish and diffuse directive intelligence, it will come to pass in the distant future that one man will, by the aid of machinery, furnish the raw material, another man's labor will make the useful articles for food, clothing, and shelter, ten more will elaborate articles of comfort and luxury, the rest, more than 80 per cent of the community, will take up vocations having to do with protection and culture.

The work of education is the direct work of helping individuals to help themselves. It does not go on as fast as it should, nor as far as it should. Our comfort is that it is making visible progress. The average schooling for the entire nation is at present only 860 days for each person. This would give four years and three-tenths—each year of two hundred days—enough to take a pupil through the primary schools of a city. Even Massachusetts, with all its schools, public and private, does not give enough schooling to amount to seven years apiece for its inhabitants. Some States of the Union give only a little more than two years for an average. But it is worthy of note that Massachusetts, with nearly twice the average schooling per individual, produces nearly or quite twice the amount of wealth per individual, compared with the nation's average. In 1880, the census seemed to show that the average production of the whole nation was 40 cents per day for each inhabitant. That of Massachusetts came nearly up to 80 cents.

It is in view of the fact that the laborers who produce raw material are paid only one-half of the wages paid to those engaged in skilled industries, such as are carried on in cities, that we find the significance of this great exposition in the city of Atlanta.

TYPES OF HIGH CIVILIZATION.

The symbols of the highest civilization are the railroad, the daily newspaper, and the school. Here we find the type of the bearer of civilization. It brings together the producer and the consumer. In the city the raw material brings the highest price and the manufactured product is found at its cheapest price.

The city makes combinations; it seeks out the producer and buys his product, selling him its equivalent of the merchandise of the world. The city thus connects the people of its environment with the world. The family that produces for itself its own food, clothing, and shelter is living on a low plane of civilization. It should produce some specialty for the market of the world, and exchange it for a share in all the productions of mankind. Such process of exchange is like a sacramental consecration. Each person consumes or partakes of the product of the world of universal human society; each, himself, contributes to the supply of all others. It is this process of intercommunication of each with all that is the essence of civilization.

The family that produces all that it consumes does not enjoy luxury or culture as the result of its labor. But when it has access to the market of the world through the mediation of the city, then it may have endless variety in what it consumes. By the division of labor skill and productive power are increased, so that the share of each person is multiplied. Hence each gets more than he gives to the world market. It is a sort of living mirror of grace—by giving one's product to the world, one gets in return manifold. Hence I have called this mediation of one's labor by aid of the world market a sacrament.

Here we may see the vast significance of the school education in enabling the citizen who shares in the productions of his fellow-men to know his fellows, and understand their views of the world. It enables him to know their opinions, and to share in their spiritual productions as well as in their material productions. It enables him to participate in the formation of national and international public opinion.

VALUE OF THE NEWSPAPER.

Small as is the schooling given by our nation to its people—some four and one-half years apiece—it suffices to make reading and writing universal, and with them gives also a limited acquaintance with the rudiments of arithmetic and geography. This fits the citizen to become a reader of the daily newspaper, and thus to bring him under an educating influence that will continue throughout his life. A newspaper civilization is one that governs by means of public opinion. The newspaper creates public opinion. No great free nation is possible except in a newspaper civilization. By aid of the printed page the school-educated person makes present to himself daily the events of the world and lives an epic life. For the epic life is the life of nations. A certain portion of the day of each citizen is given to contemplating world events, and to discussing them. He sees the doings of his State and nation, and forms his own opinion. His opinion in the aggregate, with those of his fellow-citizens, is collected and offered to the world by the newspaper. That our schools suffice to produce a government by public opinion—this is a result of a higher order than the other good results which we have canvassed as among the benefits to the South of the education which it is giving to its children. To give people the power to readjust their vocations, and to climb up to better paid and more useful industries out of lives of drudgery, is a great thing, a sufficient reason in itself for establishing a public-school system. But to give the people the power of participating in each others' thoughts—to give each one the power to contribute his influence to the formation of a national public opinion—is a far greater good; for it looks forward to the millennium, when no wars will be needed for the mediation of hostile ideas. And this is the lesson of this great exposition here in Atlanta. This is the lesson of the educational history of the South for the past twenty years.—*Journal of Education*, November 14, 1895.

The preceding paper sets forth in a clear and convincing statement the beneficial results of the extension of education and of the distribution of improved implements throughout a wide extended country, mostly of rural communities. It is a most encouraging history.

In the paper which follows by the same author, first published in a Boston journal, the assertions of a number of socialistic agitators are stated and seriously considered. The statistics and arguments adduced by Dr. Harris, in contravention of their assumptions, go to the foundations of our social existence and are earnestly commended to the thoughtful consideration of all who take interest in politico-social and economic problems.

Either the Divine impulse which leads men ever upwards to seek ever better things, is all wrong; or else, it follows inevitably that these social prophets of evil are false prophets.

(b.) WHAT WILL THE FIGURES SHOW?—THE STATISTICAL DATA TO SETTLE OUR GREAT ECONOMIC QUESTIONS.*

[By W. T. HARRIS.]

Towards the close of his first volume on the subject of capital,† the philosophic leader of socialism, Karl Marx, gives utterance to the following statement as a law of political economy in force in modern competitive industry—in which he thinks that the centralization of capital has proceeded so far as to turn laborers into slaves by absorbing or “cornering,” so to speak, all their means of subsistence—he says: “Along with the constantly diminishing number of great capitalists who monopolize the instruments of production, there is a constantly increasing mass of misery, oppression, bondage, deformity, and extortion.” This I take to be the origin of the famous Jeremiad, to which we have all listened with dismay: “In our day the rich are growing richer and fewer, the poor are growing poorer and more numerous.” Or, as Dean Farrar gave it the other day in the columns of the *North American Review*: “While the rich are growing richer, the great masses of the poor are growing relatively poorer.” In Henry George’s famous “*Progress and Poverty*” this law of modern society is quoted with tragic emphasis. Again it is used by

* Reprinted from the Boston Transcript of Nov. 21, 1895.

[†p. 790, Vol. I., third edition. In the translation of that work, edited by Frederick Engel, the passage is found in Vol. II., p. 788]

Bellamy in his "Looking Backward"—a book which, like that of Henry George, has nearly produced a revolution in the public opinion of the age on economic and social questions. A large and increasing class of our citizens look wistfully towards some one or other form of socialism for the solution of evils that they are convinced can find no remedy in our competitive industry. Thus it is a revolution, and not reform, that is on its way towards us; if Karl Marx's law of the distribution of wealth is a true law, and not merely a supposed one.

IMPORTANCE OF THIS PROPOSITION.

How important, then, to have this question of the trend of modern productive industry settled by an active canvass of the statistics of this country and in all countries of the world where a like or a different system of industry prevails.

And yet our best-hearted philanthropists and economists in large numbers are content to enounce this supposed law, as Dean Farrar has lately done, without questioning its validity. There are no efforts made by the statisticians in charge of the census of any nation to secure the best data to prove or disprove this law.

If we must incline to the side of the socialists and believe with them that the present structure of our industrial civilization is so organized that the rich become richer and fewer and the poor poorer and more numerous, and that the middle class is sinking to the level of the poor class, we must admit that there is need of a revolution, and that a mere reform is not sufficient. Something is radically wrong in that case.

WHAT FORM OF STATISTICS IS REQUISITE.

Statistical data are therefore needed in the first place to show the comparative ratios of wealth and poverty in different epochs—some recent date, 1880 or 1890, and some older date contemporary with the beginning of the modern era of steam transportation, say 1830 or 1840; also some still older date contemporary with the beginning of the era of machinery, 1790 or 1800 in Great Britain; 1820 in this country.

But in the countries where a carefully graded income tax has existed, as in Great Britain, there ought to be found the data for close estimates. Mr. Dudley Baxter in 1867 estimated the national income or total production of the United Kingdom and classified the people according to wealth and poverty. About the same time Leone Levi undertook similar researches. Since then Robert Giffen, the head of the statistical department of the board of trade and president of the Statistical Society of Great Britain, has written numerous papers in his careful and judicial spirit, going over the data which bear upon this important question of the distribution of wealth, not only in his nation, but in other nations which publish income returns. His two series of essays, published by George Bell & Sons in London, are the best works we have on the subject. The new edition of Mulhall's Dictionary of Statistics, published in 1891, brings together a vast amount of statistical data on this subject, under the heads of Income, Wealth, Finance, Occupation, Prices, Agriculture, Manufacture, Commerce, Taxation, and the like topics. These items are of more or less value according to the authorities from which they are compiled or in proportion to the good luck of Mr. Mulhall in guessing the results from such data as he could find. The latest edition of the Dictionary of Statistics—that of 1891—is of much greater value than the former editions, because its author takes more pains to give his authorities.

I give the following figures from Leone Levi's *Wages and Earnings of the Working Classes*, published in 1885, as the most probable facts that bear on the supposed law of Karl Marx:

	1850-51.	1879-80.
Great Britain:	<i>Number.</i>	<i>Number.</i>
£150 to £300	68,864	241,568
£300 to £500	21,387	61,615
£500 to £1,000	12,258	29,839
£1,000 to £2,000	4,708	11,495
£2,000 to £3,000	1,342	3,474
£3,000 to £10,000	1,551	4,065
£10,000 to £50,000	312	910
£50,000 and over	26	77
Total	144,322	398,835
Average income	£470	£424

INCREASE OF INCOMES OF ALL CLASSES IN GREAT BRITAIN.

In the above table we see by the increase of incomes in 1879-80 that there are now three and one-half times as many in the lowest rank of the middle class as in 1850 (incomes \$750 to \$1,500); three times as many in the next rank (incomes \$1,500 to \$2,500); two and one-half times as many with incomes from \$2,500 to \$5,000; two and one-half times as many with incomes from \$5,000 to \$10,000; two and three-fourths times as many from \$10,000 to \$15,000. Meanwhile the population has increased only 33 per cent.

The middle class (incomes \$750 to \$5,000) has trebled—102,489 in 1850 to 333,022 in 1880. The moderately wealthy class (incomes \$5,000 to \$15,000) has more than doubled—6,050 to 14,969.

The laboring class, whose annual incomes are less than \$750, averaged in 1850-51 £53 (\$265); in 1881 the average had risen to £83 (\$415). Very many, 180,000 or more, had ascended from the poor class into the class paying an income tax.

The average daily production of each inhabitant of the United States has been found to be 40 cents on the basis of 7,300 million dollars total annual product in 1880. The average daily production of an inhabitant of the British United Kingdom is 38 cents on a basis of 1,000 millions sterling total annual product. But at 1,247 millions sterling (Leone Levi's estimate), the figure usually given for that product, is 49 cents a day, making by far the largest average income per inhabitant in the world.

NEED OF STATISTICS TO SHOW DISTRIBUTION OF WEALTH AMONG DIFFERENT CLASSES OF SOCIETY.

The first statistical data that should be investigated by our economic students should therefore be those that relate to the distribution of wealth among the different classes. But it is necessary to have with this a carefully ascertained census of the total annual production of the nation, from which the average per capita of each inhabitant should be computed. For there is a second great economic question needing to be settled. It is that of the claims of labor or capital for wages. It is assumed by socialists that wages can base its claims on the amount of wealth produced and not on the rates fixed by competition of labor with labor. Hence arise numerous strikes and a waste of time and destruction of capital. (The question here relates only to socialistic strikes and not to strikes justified by the greed of capital to get more than its share.)

We could say with assurance of reason to the laborer who claims that his wages should be fixed according to the total product and not according to the rates for which the labor market could supply his place: "Yes; but you can not reasonably claim for your share a larger wage than each laborer would get if the total annual production of the nation were divided among the laborers, and this, too, without setting apart any portion for the payment of directive power or for the use of capital or the rental of land."

In 1880 the production of the United States (as we have estimated it) amounted to the sum of 40 cents per day for each man, woman, and child. If this were divided among those following a gainful occupation, each would receive \$34.80 per month, or \$1.35 a working day, or \$8.10 per week of six days.

MISTAKEN PREMISE OF A PHILANTHROPIC LECTURER.

In a course of lectures in the School of Applied Ethics I heard a philanthropic clergyman of Philadelphia say last winter, speaking of a poor girl in Chicago who had been one of the strikers for higher wages, that she received only the wages of \$9 per week. This apparently seemed to him scandalously low. He asked that capital should divide with labor and increase the wages from \$9 to some higher sum not stated.

If the philanthropist had begun by inquiring into the statistical data of the question, he might have discovered that the poor but defiant girl—for she was declaiming against the tyranny and greed of the corporation for which she was working—was already receiving an amount in wages above the average total product of the nation divided pro rata among its actual laborers. If she had her share, without giving anything to capital or land, she would have been receiving not \$9 a week, but only \$8.10 per week.

She was already on the side of the "bloated bondholders" whom she was condemning so earnestly, for if anyone receives more than his numerical pro rata of the wealth produced in his land it is evident that someone else must receive less than that numerical pro rata. And even the most pronounced socialists admit that no individual can claim as his share more than a numerical pro rata would come to, if capital and land are not even considered, and nothing is set aside to remunerate them for the use made of them by labor.

THOROUGH COLLECTION OF STATISTICS OF PRODUCTION AND WAGES NEEDED.

Is it not evident there is a very important statistical item here to be obtained and fixed with precision when strikes and incipient revolutions are depending on it, and when noble-minded men or women believe and teach that the members of the labor unions do not receive their just dues in wages? Their sympathy is not given to the farmer, who averages less than \$6 a week, but to the mechanics and manufacturers—those already working in the mills for much more than \$8 per week, if the estimate quoted is correct. Ought they not to ascertain this item of average production and also the items of average wages and income of farmers, mechanics, and all classes of people? We ought not to depend on a few mere estimates such as those of Dudley Baxter, Leone Levi, Edward Atkinson, Robert Giffen, or Michael Mulhall.

IGNORANT ASSUMPTIONS AS TO COMPARATIVE HEALTH OF LIFE IN TOWN AND COUNTRY.

Right here comes in the question of cities and their portentous growth in recent decades. Is the growth portentous or beneficent?

It is assumed that the country is much healthier than the town, and yet with the modern growth of cities the average length of life has increased until it has reached forty-one years in Great Britain. It would seem that the comforts of the city are more conducive to long life than the exposures of rural life.

Statistics carefully taken should show where lies the fallacy of this. Moreover, it should be shown why people leave the rural districts for the town. Will it not be shown that more persons are engaged in agriculture than are actually needed to produce the raw materials of food and clothing? Is there not overproduction of raw material?

On the other hand, is there any danger of overproduction in manufactures and commerce as a total? Let the laborer who produces raw material, and also the laborer who produces the rough manufacture, ascend to the manufacture of articles of luxury, comfort, and ornament to the production of means of culture; let him ascend to the vocations that minister protection and culture, that connect each individual with all his fellows, and surely there will never be overproduction in the higher vocations. The time will come when one man with machinery will produce the raw material for the food and clothing of one hundred people. Another with machinery will make the coarse or plain and needful food and clothing. Ninety-eight will be engaged in higher occupations.

To show what these higher occupations are towards which they are drifting, I subjoin a conspectus of the lower and higher vocations. The laborers in the former decrease, but in the latter there is a steady increase to be expected.

LIST OF OCCUPATIONS.

I. The lower order—production of necessities.

1. Procuring of raw materials.
 - (a) Agriculture and grazing.
 - (b) Hunting, fishing.
 - (c) Mining (including petroleum wells, etc.).
2. Transportation.
 - (a) Teaming.
 - (b) Railroad.
 - (c) Water transportation.
3. Transformation of products.
 - (a) Textile fabrics, cloth and clothing.
 - (b) Wood and metal work.
 - (c) Leather.
 - (d) Miscellaneous.

II. The higher order—production of means of luxury, of protection, and of culture. The vocations that provide:

1. Means of luxury and creature comfort, including manufactures that require a higher order of educated, technical skill.
2. Means of protection, including—
 - (a) Those who provide amusement and recreation.
 - (b) The medical profession.
 - (c) The legal profession.
 - (d) Officials managing public works or public charities; also Government officials.
 - (e) Insurance companies and the directive agents of companies formed for guarding the interests, general or special, of society as a whole or of any particular part of it—charitable associations, trade unions, etc.

II. The higher order—production of means of luxury, etc.—Continued.

The vocations that provide:

3. Instrumentalities of culture.

- (a) Moral and religious—churches, etc.
- (b) Intellectual and moral education—schools and libraries.
- (c) Esthetic—including all trades that produce ornament on useful goods or that produce works of art in sculpture, painting, music, poetry, and literary art, landscape gardening, etc.; also all influences that cultivate taste—the formation and care of art museums, etc.
- (d) The collection and diffusion of information, editing and printing of books and newspapers, telegraph operators, etc.
- (e) Pursuit of science and the invention of devices useful in the arts.

HENRY GEORGE'S DOCTRINES SHOULD BE TESTED BY ACCURATE STATISTICS.

Again the question of single tax and of Henry George's doctrine of the danger of private property in land—this can be settled by the statistics showing, first, the ratios of wealth in land and wealth in improvements, and secondly, by the statistics showing the ratio of rent to the total cost of living.

The production of the United States has risen in 1880 to 40 cents per day for each inhabitant from an average of 25 cents in 1850. The estimate here made for 1850 compared with that of 1880, given in cents per day, is as follows:

	1880.	1850.
Agriculture (including live stock).....	18	12
Manufactures as reported.....	10.8	5.8
From transportation in enhanced value of products.....	3.7	1.2
Agricultural product consumed in the household and not reported.....	4.1	3.2
Household manufactures.....	1.4	1.8
Building of railroads and houses, mining, fisheries, and miscellaneous.....	2	1
Total.....	40	25

Judging by data derived from the United States census and from the State census of Massachusetts for 1885 (taken by Hon. C. D. Wright) the total land value in 1880 was \$10,000,000,000. The total of rent must have been in the neighborhood of \$400,000,000. This was a little more than 2 cents per day for each inhabitant.

If the total product is 40 cents per day, it is eighteen times as large as the amount that is claimed by the land, and Henry George has been mistaken in his estimate of the evils of private ownership in land. Or if we take the estimate of Mr. Shearman (in *The Forum*), namely, twenty billions instead of ten billions for land values—still the result remains substantially the same. For that still would give only one-ninth of the total income for rent instead of one-eighteenth, as before.

Since the rental of the land of the country in 1850 (estimating the land at the low estimate of \$3,000,000,000) at 4 per cent amounted to 1½ cents (1.43 cents) per day to each inhabitant, it is seen that while the income has increased 15 cents per day, the average rental per inhabitant has increased in thirty years only three-fourths of a cent per day.

English land seems to draw for its rental less than 3 cents per day from each inhabitant. But we ought not to be left to mere estimates in so important a matter. For this land question involves a revolution like the question of the distribution of wealth. It is easy for census bureaus to ascertain the amount of wealth in land exclusive of buildings, as was done in Massachusetts in 1885 by Colonel Wright; not only this, but the value of all improvements should be carefully ascertained and subtracted from the total of real estate. Then this would give data for sound views on the land question.

HOW MEN OF WEALTH ADVANCE CIVILIZATION.

Another line of statistics of importance to our social and political well-being is an investigation into the effect of a wealthy class of citizens in accumulating property within the nation from decade to decade. Robert Giffen suggests that it is the wealthy who can not spend all of their income, but who have to invest it in public improvements, to whom we owe the larger part of the savings accumulated from generation to generation. All people profit by these accumulations invested in public improvements. Careful statistical investigations would show us how useful or how useless are the wealthy class in this and other respects.

XI.

MANUAL TRAINING.

THE BERKELEY SCHOOL EXHIBIT—THE TEACHERS COLLEGE—THE HORACE MANN SCHOOL—THE MACY MANUAL TRAINING HIGH SCHOOL—A CONFERENCE ON MANUAL TRAINING HELD AT TEACHERS COLLEGE MAY 18TH, 1895—STATISTICS FROM ANNUAL REPORT OF U. S. COMMISSIONER OF EDUCATION 1893-94.

While in the volume of this Report known as "Part II.," given to the subject of "Industrial and Manual Training in Public Schools," issued with the imprint of the year 1892, there will be found very complete records of the beginnings of this new educational movement; the small edition of the present Special Report narrowly limits its circulation.

However, in Volume I. of the latest Annual Report of the U. S. Commissioner of Education,—(that for 1893-94.—just now being issued to the public in October, 1896.)—those interested in this particular subject, who may not be able conveniently to see the fuller records in "Part II." of this Special Report; will find an interesting account of the movement, prepared by one of its leading pioneers, Professor C. M. Woodward, of St. Louis; who treats it, both historically and contemporaneously, in a chapter, entitled "The Rise and Progress of Manual Training."

In this chapter is given a concise statement of the first efforts made to introduce and develop the new movement. The article is illustrated with views and floor plans of several of the leading Manual Training Schools.*

In addition to the evidence of the continued and growing interest in Manual Training and Industrial Art Schools as shown by the newly established schools described in this Appendix, there are two recent illustrations in the City of New York which indicate, in their several ways, something of the widening of the interest now taken by all classes of the community in these special phases of educational activity.

One of the incidents referred to was the giving of a "Manual Training Exhibit" of the works of its pupils by the Berkeley School, an expensive and exclusive private institution for the education of boys and youth, situated in 44th Street near Fifth Avenue.

This incident suggests that the wealthy patrons of the private schools are no longer willing that so valuable an element of education shall continue to be monopolized by the free public day and night schools.

The brief account of the Berkeley exhibit which follows, is from the notice in the New York Tribune, of May 23rd, 1896.

* See Chapter V. of Part II, Vol. I, Report of U. S. Commissioner of Education, for 1893-94. Pages 877-949.

(a) A MANUAL TRAINING EXHIBIT.

WORK OF BERKELEY SCHOOL PUPILS SHOWN TO VISITORS.

An exhibit of work in manual training done by the pupils of the school was given yesterday afternoon at the Berkeley School at No. 20 West Forty-fourth-st. There was also a fencing bout for the championship of the school. The exhibits were arranged on tables stretched along one side of the big drill room, leaving space for the fencers in the centre. During the afternoon the street in front of the school was lined with carriages and the corridors and parlors within were filled with men and women who had come to see what kind of work their boys had been doing or on account of interest in the school and its work for other reasons. The boys themselves realized the importance of the occasion, and seemed proud of their handiwork that was on display.

The exhibits of manual training work were selected by William Crafts, the instructor and director of manual training, and Miss Clara Chester, the instructor of the junior and preparatory classes. At the lower end of the tables was the work of the preparatory department in cutting paper, clay modelling and slip work. There came the drawings of the junior first and second classes. These were made first on paper and then on wood, to be carved according to the design.

The work of the lower middle, first and second classes is in carpentry. During the first part of the course the work is in fine joining and at the end a dove-tailed box of mahogany and quartered oak, with an inlaid cover, is made. Eleven of these boxes were on exhibition yesterday. At the upper end of the tables were specimens of mechanical drawing done by members of the lower middle first and second and the upper middle second classes.

* * * * *

Several trophies won by the athletic teams of the school in various contests were shown; among them, of interest in this connection, was "the medal presented to the school at the Paris Exposition, as the highest award to any school outside of Paris for Excellence in Drawing and Method of Conduct."

The second event to which I have referred is the opening, September, 1895, of the new Manual Training School in connection with "The Teachers College," New York City, which marks an advance step in the symmetrical development of that notable Institution for the professional training of teachers; for, while the Teachers College from the first, included instruction in Manual Training and training in Industrial Art among its required courses; the opening of this fine new building, with its generous equipment, largely increases the facilities of the College for giving complete courses for the training of a body of competent and accomplished instructors in these modern educational methods. To the several grades of schools already included in "the Horace Mann School" wherein the students of the college are trained in the practical work of teaching in each of the grades as they are classified in the public schools, from Kindergarten to High School; the opening of the new Macy Manual Training High School, now adds a Science High School, with a course of three years of preparation for entrance to Polytechnic and Engineering Schools.

In observing the methods of the teachers; and, later, in teaching under supervision of the regular teachers, the pupils of this school the student-teachers of the College will find ample opportunity for perfecting themselves in the exercise of the best possible methods of giving instruction in the Industrial Arts.

It is evident that permanent success of the movement for introducing Manual and Industrial Art Training in public schools generally, is vitally dependent upon the existence of a body of competent instructors in these specialties; so that the school systems of cities and towns throughout the country, shall no longer be dependent on

chance opportunities of securing a skilled mechanic who is willing to give a part of his time to drilling a class of boys in carpentering or blacksmithing. It is true that some more fortunate places have been able to secure the services of some of the young graduates of the few Technical Institutes; yet it must be recognized that these admirable institutions were not founded, or designed, for the purpose of educating professional teachers; so that their graduates, however well equipped in the technical knowledge of working in wood and iron, have had little or no direct training in the more difficult art of the teacher.

In the Teachers College, of New York City, we have an incorporated institution of the highest class, founded for the express purpose of elevating the business of teaching to an equality with that of the recognized learned professions. With the recent opening of the Macy Normal Training High School Building, with its ample equipment, this college now offers to those wishing to qualify themselves to be Instructors in Manual Training and Industrial Art, as favorable opportunities for acquiring professional training in these specialties as are afforded to those who wish to become teachers in other branches of Pedagogy.

So far, then, as the Teachers College gives such instruction, as well as that given to pupils of the Horace Mann School, with its added facilities due to the opening of this new department of the school, details of the courses given, come within the scope of this Appendix; already so largely given to accounts of the newly founded Institutions for Industrial Art Training.

It should, perhaps, be further stated that "The Horace Mann School," and "The Macy Manual Training High School," are schools for the regular teaching of their own pupils. These schools have a corps of teachers of their own, who are, however, under the direction of the authorities of the Teachers College; since the schools, also, serve as Training Schools of the College, whose students are required to observe and study the methods of teaching followed in the schools and, when sufficiently advanced, are required to take part in the actual work of instruction; so that they may have not only a theoretical, but a practical knowledge of teaching.

The following statements of the College and of the two schools, are from the official publications of the Teachers College.* They are here quoted because they furnish an authorised account of the general purposes of the Institution, as well as such details of the courses of study adopted, and methods of instruction followed, in the two schools; as will admit of fair comparison with those of similar schools elsewhere described in this Report.

(b) TEACHERS COLLEGE.

HISTORY AND PURPOSE.

It was the design of the founders of Teachers College to create a more intelligent and active interest in public education, to establish an institution for the scientific study of the educational problems of the time, and to train supervisors and teachers for all grades of schools. The work was undertaken by a group of men and women

* Teachers College. Circular of Information, 1895-96. Morningside Heights, New York, 120th street, west. Pp. 97. Macy Manual Training High School of The Horace Mann School. Announcement 1896-97. Pp. 17.

whose conception of what schools should teach was derived chiefly from the knowledge of what life requires; whose interests and aims were, at first, primarily philanthropic, but who later found that of all roads to reform, education is the surest and most direct, and that in education the key to progress is the training of teachers.

Under the name of New York College for the Training of Teachers, this institution received a provisional charter from the Board of Regents of the University of the State of New York, Jan. 12, 1889. Three years later, Dec. 14, 1892, all the conditions of the provisional charter as to financial support, endowment, and educational standing having been fully met, the charter was made absolute and the name was changed by mutual consent to Teachers College.

Teachers College is a professional school designed to equip intending teachers thoroughly for their profession and to afford to those who are already members of the profession opportunities for specialization and graduate study. The elements of a secondary education are not taught in the College, but are required of applicants for admission, and are given in the high school and introductory courses.

ALLIANCE WITH COLUMBIA COLLEGE AND BARNARD COLLEGE.

For the purpose of securing to the students of Columbia College, Barnard College and Teachers College reciprocal advantages and opportunities, an agreement, taking effect July 1, 1893, was entered into between the above named institutions. By the terms of this agreement certain courses of instruction in Teachers College are accepted by Columbia as counting toward the Columbia College degrees. These courses pass under the charge of the Faculty of Philosophy of Columbia College and the members of the Faculty of Teachers College are represented on that Faculty.

The courses of instruction given in either Columbia College or Teachers College, subject to the general regulations of each institution, are open to every male student who has duly matriculated in either of such colleges upon paying the matriculation and tuition fees of the college in which he has so matriculated. Women who are students in Teachers College, and who comply with the necessary conditions as to previous collegiate training, may become candidates for the Columbia College degree by registering themselves at Barnard College, without additional expense.

BUILDINGS AND EQUIPMENT.

The site of the College comprises twenty-five lots, situated on West 120th and 121st streets, between Amsterdam avenue and the Boulevard. The choice of this location by the Trustees was singularly happy. The situation is one of great beauty being on the crest of a height of land which commands a view, on the one side, of the Harlem River and the city, and, on the other, of the Hudson and the Palisades. The new site of Columbia College is across the way, that of Barnard College is near in sight are Riverside and Morningside Drives, Morningside Park, the Grant Monument, St. Luke's Hospital, and the Cathedral of St. John the Divine, now in process of erection. The College is also readily accessible, being four minutes' walk from the crosstown cable road, which intersects all railways and brings within reach the northern end of the island. Two lines of surface cars, going north and south, pass within half a block. Each of these is shortly to be made a cable line, and will carry passengers for one fare from the Battery and intervening points situated both on the east and on the west sides. With the present means of transit, students come from suburban towns in New Jersey and Long Island, and from points in New York State and Connecticut; with rapid transit, there will be no more central point on Manhattan Island than the site of Teachers College on Morningside Heights.

The college buildings, two in number, which already represent an expenditure of over \$660,000, and which, when completed, will cost over \$900,000, were occupied for the first time in September, 1894.

The Main Building has a frontage of 210 feet, and when completed will inclose three sides of a quadrangle, the Macy Manual Arts Building forming the fourth. The west wing has not yet been erected. On the first floor of the Main Building are the rooms of the President and the Trustees, the assembly hall, kindergarten reception room and the main offices of the College. The second floor is entirely devoted to the class rooms and offices of the Horace Mann School. The third floor contains the Bryson Library and reading rooms, and the conference and lecture rooms of the departments of Secondary Teaching, Elementary Teaching, Psychology and General Method, and English Language and Literature. The fourth floor is occupied by the Department of Science, and contains a lecture room with stereopticon, four finely equipped laboratories, for physics, chemistry, and the natural sciences, besides a departmental library stock room and offices. The west wing

when erected, will contain the laboratories and lecture rooms of the Department of Domestic Science and Art on the fourth floor; the gymnasium, dressing rooms and lecture room of the Department of Physical Training, and the lecture rooms of the Department of the Kindergarten on the first floor; and some of the recitation rooms of the Horace Mann School. Some rooms in other parts of the building are now used for these purposes. The Trustees hope that the west wing may be given by some person as a memorial.

The Macy Manual Arts Building, which was given by Mrs. Josiah Macy as a memorial to her husband, is the home of the Department of Manual Training and Art Education. Architecturally the Macy Building is in harmony with the Main Building, with which it is connected. It is thoroughly equipped with the best of modern appliances for manual training and art work. It contains four large rooms for woodworking, including wood-joinery, wood-carving, wood-turning, and pattern-making; four for metalworking—chipping and filing, tinsmithing, molding and casting, forging and machine tool work; two for clay-modeling; two for constructive drawing—one mechanical and the other architectural; two for elementary freehand drawing; and two studios for advanced drawing and painting. Connected with these are store rooms for tools, supplies, models and finished work. In addition to these is a lecture room, provided with a stereopticon, and many smaller rooms such as offices, a library, museum, conference room, photography room, engine room and stock room.

This building contains many valuable casts and a rare collection of photographs and models illustrating the history of art; and in both buildings the halls and class rooms are well filled with fine photographs and prints, carefully hung in appropriate departments.

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SCOPE OF THE PROFESSIONAL WORK: SCHOOL OF OBSERVATION AND PRACTICE.

The course of study is in part required and in part elective, and includes both theoretical and practical work. Whether the student enters for the purpose of becoming a general teacher, a specialist, or a superintendent, his first duty in the College is to become possessed of the teacher's viewpoint, method and spirit. A certain prescribed course, in the history of education, psychology, and the principles and methods of teaching, is therefore laid down for each student.

Upon this basis he may elect a major course in one of the following departments—Psychology and General Method, Elementary Teaching, Secondary Teaching, English Language and Literature, Kindergarten, Manual Training and Art Education, Science, and Domestic Science and Art.

In vital connection with the College there exists a school, known as the Horace Mann School, in which, under unity of plan and administration, every stage in the school life of a child from the kindergarten through the high school is represented, and the complete curriculum may be studied as an organic whole.

This school exists primarily for the purpose of affording to the Faculty of Teachers College and to other students of education a favorable opportunity to work toward the solution of practical problems in education; and also for the purpose of opening to intending teachers a field for observation and practice. Being under the personal superintendence of the heads of departments in the College, and having in addition a competent staff of professional teachers, this school is able to prepare candidates for entrance to the introductory course of Teachers College, to colleges of liberal arts and to scientific and technical schools.

For the intending teacher the capstone of the course is the practice work in the Horace Mann School. Without it no one is a trained teacher, with it no one can be called inexperienced. There is a growing tendency on the part of superintendents of public instruction to recognize this fact. The diploma of the College has been considered by some state and city superintendents as equivalent to two years of actual experience in teaching.

In the junior year the work is, with few exceptions, largely theoretical and preparatory to practical work. In the senior year, after thorough preparation, the student is admitted to practice. In this year, also, the work as a whole is more individual, and those who will are encouraged to devote themselves to problems involving specialization and research, special topics in psychology and the principles of education, specific periods in the history of education, the systematic study of children, and the special problems arising in the work of teaching, organization and superintendence.

For persons actually engaged in the work of teaching, but who wish to pursue further courses of professional study in order to enable them to meet satisfactorily the demands made upon them by the continual expansion and elevation of the

school curriculum throughout the country, Saturday classes are organized in the several departments of the College.

Detailed statements of these courses will be found under the various departments.

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FEES AND EXPENSES.

The fees of each student for a year, or any part thereof, are as follows:

Tuition Fees:

Candidates for a degree spending not less than half their time under the Faculty of Philosophy of Columbia College.....	\$150
Candidates for a diploma in the Department of the Kindergarten.....	130
Candidates for a diploma in all other departments.....	7½
Students in the introductory course.....	7½
Special students, for each period of attendance per week, for the year:	
In courses that lead to a degree.....	1½
In courses that do not lead to a degree.....	10
Unclassified students, for each period of attendance per week, for the year.	1½

The charge for board, lodging, and laundry work is \$316 for the scholastic year, not including board and laundry work during vacations between terms. Students remaining at the College during these vacations will be charged for board and laundry work at the same rate.

The necessary text books should not cost more than \$10 annually.

The following is an official statement of the relation of this College to the studies germane to this Report.*

TEACHERS COLLEGE.

The Department of Manual Training and Art Education is one of the eleven departments of the Teachers College. In coöperation with other departments, particularly with the Department of Psychology and General Method, it aims to *prepare specialists* in the several branches of manual training and of art education, both for teaching in schools of elementary and of secondary grade, respectively, and for the work of supervision and organization.

The courses in this department, 32 in number, leading to the above ends, include Psychology and General Method, History of Education, Mechanical Drawing, Free-hand Model and Object Drawing, Drawing from the Antique, Painting in Oil and Water Color, Outdoor Sketching, Clay Modeling, Designing, Wood-carving, Wood-joinery, Wood-turning, Pattern Making, Forging, Machine Tool Work, Manual Training for Elementary Schools, Plans and Equipments, History and Principles of Manual Training, Methods of Teaching Manual Training and Drawing, Observation and Practice Teaching.

The *requirements for admission* to these courses are of such a nature as to encourage first-class applicants, and particularly such as have had technical or art training or successful experience as teachers in normal schools, or in public school systems. The success and high standing of graduates and former students is also reassuring to intending students. The strength of the *faculty*, the completeness of the *equipment* and the advantage of the *metropolitan location* are apparent.

Owing to the recent establishment of a \$5,000 *loan fund*, the College will be better able than ever before to coöperate with those whose present savings are inadequate but whose earning power promises to be so enhanced by a course of professional study that borrowing a portion of the needed funds seems justified on business grounds.

Applications for information and for admission may be addressed to the Registrar, or to

CHARLES A. BENNETT,
Teachers College,
Morningside Heights, 120th Street, West,
New York City.

WALTER L. HERVEY, Ph.D., *President.*

The College comprises eleven Departments of Instruction. These are Department of Psychology and General Method: Department of

Elementary Teaching: Department of School Supervision and School Law: Department of Secondary Teaching: Department of English: Department of the Kindergarten: Department of Science: Department of Domestic Science and Art: Department of Manual Training and Art Education: Department of Physical Training: Department of Vocal Music.

Of these, The Department of Elementary Teaching,—since this includes the Horace Mann and the Macy Manual Training Schools,—the Department of Domestic Science and Art, and The Department of Manual Training and Art Education, are those with which the present Report is especially concerned.

DEPARTMENT OF ELEMENTARY TEACHING.

CLARENCE EDMUND MELENEY, A. M. (Colby)
 SUSAN ADELE LATHROP (Teachers College)
 MILLIE ARMS (New Britain State Normal School)
 IDA ELIZABETH ROBBINS (Oswego State Normal School)
 EVELYN BATCHELDER (Chelsea City Training School)
 MILDRED IONE BATCHELDER (Springfield City Training School)
 AMY SCHÜSSLER (Teachers College)

AIM AND SCOPE.

The aim of this department is to prepare teachers for the elementary grades. In most public schools, and in many private schools below the secondary grades, the class teachers are required to give all the instruction and training, not only in the common English branches, but also in nature study, form, drawing and color, music, and physical training. Few schools are fortunate enough to command the services of a specialist as director or supervisor of these special subjects, and it is quite unusual, even if considered desirable, to find special teachers directly in charge of the class work.

In primary schools the work of each year is concentrated in the hands of a single teacher. In subsequent grades differentiation is possible, subjects of instruction take a more distinctive form, and the assignment of the teaching force on the departmental basis is advocated by some authorities.

It is the purpose of this department to prepare teachers of the elementary school to meet the conditions which usually exist. To accomplish this the work in methods of teaching is based upon the instruction given and the methods employed in schools below the secondary grades.

(c) THE HORACE MANN SCHOOL.—THE SCHOOL OF OBSERVATION AND PRACTICE.

The Horace Mann School, which embraces all the grades from the kindergarten through the high school, furnishes the opportunity for such study. The eight grades of the elementary school are located in the eight class rooms in the eastern end of the main building and the adjoining east wing on the second floor. These rooms are furnished with individual adjustable desks to accommodate from twenty-four to thirty pupils, and provided with all the necessary modern appliances for the instruction of the children.

The instruction in the elementary school, except in the subjects specified in the following paragraph, is under the supervision of the head of this department, while all departments co-operate in unifying the course.

In the grades where science, manual training, history, and the formal study of English are taught, the heads of these several departments direct and supervise the work and give the instruction necessary to prepare the student to teach these subjects. The co-operation of the departments of Art Education, Music, and Physical Training is in like manner secured in preparation for such work in all grades.

This organization of the school affords the students in all departments the opportunity for the study and training necessary to prepare them to teach. The school is a laboratory for the training of teachers.

The heads of the departments teach the principles and methods of their several subjects, direct the observation, decide upon the preparation of students to undertake practice teaching, supervise the practice, and conduct the criticisms.

MAJOR COURSE.

Candidates admitted to the College may enter this department as major students without further examination, and if not proficient in subject-matter offered by the special departments of Science, Art Education, Music, and Physical Training, may elect such work in the introductory courses.

DEPARTMENT OF DOMESTIC SCIENCE AND ART.

JOHN FRANCIS WOODHULL, A. B. (Yale)
 HELEN KINNE (Teachers College)
 MARY SCHENCK WOOLMAN (Teachers College)
 DORA BAY EMERSON, B. S. (Wellesley)
 ADELAIDE BENNETT (Teachers College)
 ALETTA VAN WYCK SCHENCK (Pratt Institute)
 MATILDA GARRETSON REA

MAJOR COURSE.

This course is designed for those who wish to prepare themselves to become teachers of cooking and sewing in accordance with educational principles.

Candidates for admission to this course will feel the need of a broad and liberal education. A good high school course, with two years' added experience as teacher or student, is the least that should be considered adequate; much more is desirable. All candidates for admission will be required to pass the examinations for entrance to the college.

The course continues two years and includes instruction in plain cooking and plain sewing, cutting and fitting; drawing; the application of chemistry, physics, physiology and hygiene to matters of the household; psychology and general method, history of education, methods of teaching and practice teaching.

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The laboratory work in cooking includes practice in all branches of cookery. More attention, however, is given to such economical and wholesome cooking as can be properly taught in public schools and in industrial classes than to the preparation of elaborate dishes. Careful study is made of the different methods of applying heat to food materials, and in these experiments the student learns to operate coal, gas, gasoline and kerosene stoves and the Atkinson Cooker. It is the purpose of the course to reduce cooking to a science by the exact methods of the chemical laboratory. In all the processes the aim is to study the conditions and learn to control them until uniform results are obtained.

The course in sewing includes all branches that are required by public and industrial schools; plain sewing, plain embroidery, the drafting, fitting and cutting of simple garments. A course of lectures is given on methods of teaching sewing; the materials and tools in use and their development and manufacture; color in connection with dress and home furnishing; healthful dress; hygiene, etc. There is also a course of lessons in drawing and color for the study of the human form and drapery.

A collection of raw materials, textiles and tools for demonstration lessons has been procured, and is of great value to the student.

Training is given in such details of departmental management as the purchasing of supplies, and the planning of courses of lessons and equipments for cooking and sewing classes. A special feature is made of economical cooking and sewing outfits, and the student is given such practical problems as the planning of an inexpensive outfit for a class of twenty and the making of the best selection of utensils to be obtained for a given sum.

Occasional visits are made to the schools of New York and vicinity to study the conditions of the work, and many of the students acquire excellent experience by teaching classes in some of the mission schools in New York when the hours do not interfere with college work.

DEPARTMENT OF MANUAL TRAINING AND ART EDUCATION.

CHARLES ALPHEUS BENNETT, B. S. (Worcester Polytechnic Institute)
 ELIZABETH ADELAIDE HERRICK (Massachusetts Normal Art School)
 JOHN HENRY MASON, B. S. (Worcester Polytechnic Institute)

Directors of the Department.

WILLIAM HENRY GOODYEAR, A. M. (Yale)
 WILLIAM SMITH ROBINSON (Massachusetts Normal Art School)
 KARL VON RYDINGSVÄRD (Tekniska Skolan, Stockholm, Sweden)
 CHARLES HENRY WESTCOTT (Massachusetts Institute of Technology)
 JENNY FRANCES LEWIS (Massachusetts Normal Art School)
 WILLIAM FREDERICK VROOM (Teachers College)
 VINTON SHERMAN PAESSLER (Massachusetts Institute of Technology)
 MARY ROGERS (Cooper Institute and Teachers College)
 IDA STEVENS ROBINSON (Teachers College)
 ANGIE HEARTFIELD (Teachers College)
 LUCY HESS WEISER (Teachers College)
 GRACE LYDIA BERNEY (Massachusetts Normal Art School)

AIM AND SCOPE.

The aim of the department is (1) to train teachers and supervisors of manual training and art education, and (2) to give instruction in manual training and art work to students pursuing major courses in other departments of the College, to special students, to pupils of the Horace Mann School and of the Macy Manual Training High School. Aided by the other departments of the College, this department gives not only the principles of teaching special branches and practice in such teaching, added to a thorough drill in subject matter, but also a broad professional training, enabling graduates to view their specialty not merely as an isolated subject, but in its true relation to the other branches of education. As an experiment station, this department aims to assist in the solution of many problems connected with the introduction of manual training and drawing into the public schools.

EQUIPMENT.

The home of the new department is the Macy Manual Arts Building. This building, completely equipped, was given by Mrs. Josiah Macy as a memorial to her husband. It is 147 feet long, 71 feet wide and is five stories high, including a well-lighted basement.

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The machinery, tools, cases and furniture constituting the equipment of the various departments have been selected with special reference to the requirements of the work to be done in these departments. Whenever it has been impossible to find such furnishings in stock special pieces have been made.

The departmental library contains many books and pamphlets on manual training and art education. In the corridors and on the walls of various rooms are many photographs illustrating the history of art. In the museum and scattered through the work rooms are vases, reliefs, models, carvings and casts. The purpose has been to make the building and its equipment complete and in every way adapted to its use.

COURSES OF STUDY.

FIRST INTRODUCTORY YEAR.

I—Freehand Drawing. Ten periods weekly.

A course designed for students who are making a specialty of art work. It consists of:

(a) Work in outline from geometric solids, casts, plant forms, still life and furniture for the study of arrangement, proportion, perspective and the practice of drawing quickly and correctly all ordinary objects. (b) Work in light and shade. Drawings in charcoal from geometric solids, simple casts, and still life groups (colored objects rendered in black and white) for practice in drawing, arrangement and handling the medium, and for the study of values, planes and simplicity of masses. (c) Pencil sketches made outside of class hours.

II—Freehand Drawing. Four periods weekly.

An abridgement of Course I, intended for students who are not making a specialty of art work.

III—Mechanical Drawing. Four periods weekly.

A course designed for those who are taking up the subject of mechanical drawing for the first time. It includes geometrical problems, lettering, drawing to scale, parallel and angular projections, sections, intersections and developments.

SECOND INTRODUCTORY YEAR.

IV—Wood-Joinery. Six periods weekly.

A comprehensive course in benchwork intended to prepare students for Course XIV given in the junior year. It includes exercises intended to teach the use of the fundamental woodworking tools, the use of many of the principal joints in construction and the application of these joints in making useful articles. From time to time during the course special illustrated lessons or talks are given on such subjects as standard measurements, cutting edges, structure and growth of trees, lumbering and the preparation of timber, warping and shrinking of timber and consequent allowances in construction.

V—Wood-Carving. Four periods weekly.

A course covering the fundamental principles of the art. In the first part of the course attention is given to the handling and sharpening of tools and to the carving of typical pieces of ornament involving the various uses of the tools. Later the student takes up the work from the standpoint of the decorator and learns to work in the following styles: Moresque, Norse, Byzantine, Roman and Renaissance. Throughout the course careful attention is given to modeling and design.

VI—Metalworking. Four periods weekly.

A course of hand-tool work in three parts:

(a) Chipping, filing and polishing cast iron, wrought iron, malleable cast iron, steel and brass; (b) sheet-metal working, including many of the processes of tin-smithing and sheet-iron working, and (c) forging, including ornamental iron work and hardening and tempering steel, in addition to numerous exercises in drawing, bending, upsetting and welding.

VII—Freehand Drawing. Ten periods weekly.

This course is a continuation of Course I and consists of drawing in charcoal and water color monochrome from groups of colored objects and casts of ornament and the human figure. It is designed to give the student an appreciation of the perspective appearance of all simple objects and the ability to give artistic expression to what he sees by means of light and shade and color.

VIII—Freehand Drawing. Four periods weekly.

A continuation of Course II intended to give a student sufficient training in free-hand drawing to enable him to enter the junior year in any major course in the college excepting Major Course B in the Department of Manual Training and Art Education. (See p. 84.)

IX—Clay-Modeling. Four periods weekly.

A technical course consisting of work from ornament and the antique. Each student is given practice in making plaster casts from his own clay models.

X—History of Art. Three periods weekly.

A course of reading, conferences and lectures illustrated by lantern photographs. The subjects will be taken up in chronological order, and during the year 1895-96 will cover mediæval, Renaissance and modern architecture, sculpture and painting.

XI—Mechanical Drawing. Four periods weekly.

This course follows Course III, and consists of advanced work in intersections and developments, including conic sections, a study of mathematical curves as applied in cams and gearing, the principles of shades and shadows and linear perspective. Special attention is given to the making of working drawings from free-hand sketches.

JUNIOR YEAR.

XII—Elementary Manual Training. Four periods weekly.

In this course are taken up several lines of manual training which are adapted to children in the elementary schools. Each of these is of such a nature that it may be carried on in the ordinary school room at any school desk to which an appropriate desk cover has been added. The course includes:

(a) Knifework in thin wood for children in the fifth grade, involving much geometry and drawing; (b) more advanced work in thin wood for the sixth or seventh grade, involving problems in construction and chip carving; (c) free whittling for children in the sixth or seventh grade; (d) construction work in paper and cardboard for grades four, five, six and seven; and (e) bent iron work which may be correlated with freehand drawing in several of the grades of the elementary school.

Students pursuing this course are expected to take complete and accurate notes of all lectures, but are not required to make all the models.

XIII—Elementary Manual Training. Two periods weekly, second half year.

An abridgment of Course XII intended for major students in the Department of Elementary Teaching,

XIV—Wood-Joinery. Four periods weekly.

In this course the subject is taken up from the standpoint of method. Course IV or its equivalent is required on admission. The course consists of:

(a) Lectures on methods of working, methods of teaching and subjects connected with the tools and materials used; (b) discussions, recitations and the writing of papers on topics requiring the consultation of books in the library; (c) working out a course of models for grammar schools, also a course for high schools; (d) advanced work in hard wood involving many of the principles of cabinet making.

XV—Wood-Joinery. Two periods weekly.

An abridgment of Course IV, intended to give students the ability to construct simple apparatus for scientific experiments.

XVI—Wood-Turning, Pattern-Making and Foundry Practice. Six periods weekly.

A course in two parts suitable for manual training high schools.

(a) Spindle turning, faceplate turning, chuck and templet turning, in which much attention is given to beauty of outline and proportion; (b) pattern-making, in connection with which practice is given in the foundry. The course contains patterns which may be used to illustrate draft, use of split patterns, "making a joint," use of green sand core, use of dry core, use of chaplets "stop-over molding," three-part molding and hanging a core.

XVII—Metalworking. Six periods weekly.

A course combining hand tool and machine tool work, involving standard processes of modern machine shop practice. At the end of the course each class constructs a lathe, a grinder, a motor or some other small machine. The equipment for this work consists of ten engine lathes, a universal milling machine, a grinding machine, planer, upright drill, sensitive drill and the necessary smaller tools, all of which have been carefully selected from the latest patterns of the best tool manufacturers.

XVIII—Freehand Drawing and Clay-Modeling. Four periods weekly.

A course from the standpoint of the teacher. The subject for the first part of the year will be the work of the primary school, that for the last part of the year the work of the secondary school.

XIX—Drawing and Painting. Eight periods weekly.

This course is arranged so that the student first makes a light and shade study from the object or group of objects and afterward makes a color study from the same object. This plan affords an opportunity for the study of black and white values in connection with color values and emphasizes the importance of the light and shade work as applied to painting.

The course includes studies from fruit, flowers, still life and the human figure, and in the latter part of the year, out-of-door sketching.

XX—Freehand drawing. Two periods weekly.

A special course for major students in domestic art.

XXI—Mechanical Drawing. Four periods weekly.

The work of this course is taken up from the standpoint of method; hence a knowledge of the subject matter is necessary on entering the course. During the course a comparative study is made of the mechanical drawing courses of elementary and secondary schools of recognized standing with a view of arriving at conclusions as to what should be included in a course of mechanical drawing and what method should be employed in teaching. The note-book work is an important part of this course.

SENIOR YEAR.**XXII—History and Principles of Manual Training (Pedagogy XI).** Two periods weekly, first half year.

This course includes a study of the development of the manual training idea in education; the Russian system; Swedish sloyd; Danish sloyd; manual training in England, France and Germany; American manual training; pedagogic principles underlying manual training; methods of teaching manual training; planning courses of instruction for elementary and secondary schools; the manual training high school—its distinguishing characteristics and its place in American education.

XXIII—Plans and Equipments. Two periods weekly, second half year.

The teacher of manual training is called upon not only to lay out his courses of instruction, but often to plan and equip rooms for manual training work. With this requirement in mind, a course has been designed covering the essential principles involved in planning and equipping for manual training work in elementary and secondary schools. In this course the following points are considered: planning with reference to number, size and location of rooms needed; their light, accessibility and convenience one to another; tools and appliances necessary for a given

range of work; how to purchase tools and machinery; arrangement of these with reference to use, convenience and safety of operation; location of line shafting; selection of motive power, hangers, belting and other material required.

Classes usually work from assumed data, although in some cases data is supplied by schools desiring the assistance of Teachers College in planning new buildings. In such cases the school furnishing the data receives a copy of the completed plans free of charge.

XXIV—Wood-Carving. Four periods weekly.

A course in two parts. The first part is a continuation of Course V, students being expected to work from their own designs. The second part is a course from the standpoint of method, which is adapted to secondary schools. In the second part students are expected to take accurate notes of all lectures, but are not required to make all the models.

XXV—Drawing and Painting. Eight periods weekly.

A continuation of Course XIX consisting of studies in black and white and in color from casts, still life and from life, and out-of-door sketching in color. Talks on perspective, light and shade, composition, color, anatomy, etc., are given from time to time as the work progresses. In this class much individual instruction is given, thus enabling a student to do advanced work in any branch he desires especially to teach.

XXVI—Designing. Four periods weekly.

A course in principles of design, including a study of the historic styles of ornament. Working designs are made for:

(a) Wood-carving, (b) wood-turning, (c) pyrography, (d) bent iron work, and (e) stained glass.

The course is closely related to courses involving construction.

XXVII—Planning Courses in Drawing. Two periods weekly.

A course for supervisors and special teachers of drawing. This course will include the study of conditions existing in schools; courses of instruction in drawing, modeling and decoration; the adaptation of work to the ability of classes, to the season of the year, and to the equipment. Attention will be given to the correlation of drawing with other subjects. The relation between supervision and special teaching, the holding of teachers' meetings, the giving of typical lessons, and the making of programs will be considered. Equipments will be planned, material for the different grades in public and private schools selected, and the expense estimated.

XXVIII—Freehand Drawing. Two periods weekly.

A course from the standpoint of method, beginning with primary work. It includes drawing from models and objects, from nature, illustrative drawing, and modeling from typical and natural forms. This course is designed for major students in the departments of the Kindergarten and Elementary Teaching.

XXIX—Machine Design. Four periods weekly.

The course involves the consideration of the strength of material and the form and proper proportion of such machine elements as the following, which are employed to a greater or less extent in all forms of machinery: rivets, keys, bolts and screws, journals and their bearings, shafting, couplings, cams and gears. Later the subject of machine design is taken up with reference to simplicity, proportion, beauty of outline, cored and ribbed sections, harmony of parts, etc. Finally, some machine is designed and a set of working drawings made.

XXX—Architectural Drawing.

This course in the elements of architecture will not be opened until September, 1896.

XXXI—Clay-Modeling.

A continuation of Course IX consisting of advanced work from the antique and from life. The course will not be opened until September, 1896.

XXXII—Methods, Observation and Practice Teaching. Two to six periods weekly.

The first half year is devoted to lectures on methods of teaching manual training and drawing and to the systematic observation of classes in the Horace Mann School and the Macy Manual Training High School. The second half year is devoted to practice teaching and criticism.

The following is a brief outline of the work:

- 1—Observing expert teaching and assisting in giving individual instruction.
- 2—Written report of observations.
- 3—Class discussion of lesson observed or conference with critic teacher.
- 4—Written plan of (a) a series of lessons and (b) of a single lesson with reference to purpose, subject matter and method of teaching.
- 5—Criticism of written plan.
- 6—Practice teaching.
- 7—Criticism of practice teaching.
- 8—Written plan of typical lesson.

9—Criticism of plan of typical lesson.

10—Giving typical lesson in the presence of classmates and the Faculty.

11—Class criticism of typical lesson.

Each candidate for the college diploma must observe and teach in at least two subjects during the year, and no student will be recommended for a diploma whose work in this course is unsatisfactory.

Department Conference. One hour weekly.

A meeting of professors, instructors, assistants and major students to report on current literature and discuss questions relating to manual training and art education. This hour has proved to be one of great value to all who attend the conference.

MAJOR COURSES.

These extend over two introductory and two college years and lead to the college diploma. In general the work of the two introductory years is intended to give technical skill, while the work of the two college years is taken up from the standpoint of method. Three major courses are offered:

I—Course A, designed to equip teachers and supervisors for all grades of manual training work in elementary and secondary schools.

II—Course B, designed to equip teachers and supervisors of art education for all grades of elementary and secondary schools.

III—Course C, designed to equip teachers and supervisors of both manual training and art education for elementary schools only.

OUTLINE OF COURSES.*

FIRST INTRODUCTORY YEAR.

English (4), Mathematics (3), History (3), Mechanical Drawing (4), Freehand Model and Object Drawing (10), Physical Training (2).

SECOND INTRODUCTORY YEAR.

English (3), History of Art (3), Mechanical Drawing (4), Physical Training (2).

A	B	C
Freehand Drawing (4) Two or more courses in Wood-working and metalworking (10)	Clay-Modeling (4) Drawing and Painting (10)	Freehand Drawing (4) Clay-Modeling (4) Wood-Joinery or Wood-Carving (6)

JUNIOR YEAR.

Psychology and General Method (6), History of Education (2), Mechanical Drawing (4), Elementary Manual Training (4), Physical Training (2).

A	B	C
Wood-Joinery (4) Wood-Turning or Metalworking (6) Freehand Drawing (2)	Elementary Drawing and Modeling (4) Drawing and Painting (8)	Elementary Drawing and Modeling (4) Wood-Joinery (4) Freehand Drawing (4)

SENIOR YEAR.

Psychology and General Method (2), Methods of Teaching Drawing and Manual Training (2), Observation and Practice Teaching (2 to 6), Designing (4), Physical Training (2).

A	B	C
History and Principles of Manual Training (2 for $\frac{1}{2}$ year) Plans and Equipments (2 for $\frac{1}{2}$ year) Wood-Carving or Metalworking (6) Architectural Drawing or Machine Drawing and Design (4)	Planning Courses of Study in Drawing (2) Architectural Drawing or Machine Drawing and Design or Clay-Modeling (4) Drawing and Painting (8)	History and Principles of Manual Training (2 for $\frac{1}{2}$ year) Plans and Equipments (2 for $\frac{1}{2}$ year) Planning Courses of Study in Drawing (2 for $\frac{1}{2}$ year) Wood-Carving or Drawing and Painting (6)

* Figures indicate the number of periods weekly.

(d) MACY MANUAL TRAINING HIGH SCHOOL.

In order to provide better opportunities for observation and practice teaching in manual training and art work the Macy Manual Training High School for boys and girls was established in May, 1895. The school will open in September, 1895, and will be under the supervision of the directors of the Department of Manual Training and Art Education.

The general plan of the school requires the pupils to divide their time in school about equally between English, mathematics and other academic studies, and manual training and art work. Throughout the entire course of four years each regular student pursues six lines of study—language, mathematics, science, sociology, drawing and manual training.

The course is so arranged as to fit a grammar school graduate for the School of Mines, Columbia College, in three years. A special circular giving further information will be sent on application.

TEACHERS COLLEGE.

MACY MANUAL TRAINING HIGH SCHOOL FOR BOYS AND GIRLS.

COURSE OF STUDY.*

YEAR.

- I. Chemistry; Algebra; English; History; Wood-joinery and Wood-carving (for boys); Wood-carving and Clay Modeling (for girls); Freehand Drawing; Mechanical Drawing; Physical Training.
- II. Physics; Algebra and Geometry; English; History or German; Woodturning; Pattern Making, and Foundry Practice (for boys); Clay Modeling and Wood-carving (for girls); Freehand Drawing; Mechanical Drawing; Physical Training.
- III. Physics; Geometry and Trigonometry; English; History or German; French; Mechanical Drawing; Freehand Drawing; Chipping, Filing, Fitting, Soldering and Forging (for boys); Domestic Science and Art (for girls); Physical Training.
- IV. Geology; History; English; French; Machine Tool Work, including Machine Construction (for boys); Domestic Science and Art (for girls); History of Art; Drawing and Painting; Physical Training.

Three-year preparatory course for Columbia School of Mines.

School year begins October 1. Tuition, \$150.

For further information, address the principal,

VIRGIL PRETTYMAN,
Teachers College,
Morningside Heights, 120th Street, West, New York City.

WALTER L. HERVEY, Ph. D., *President.*

THE MACY MANUAL TRAINING HIGH SCHOOL.

The following details of the terms of admission and of the courses of study, are from the Announcement of the school for the scholastic year 1896-97.

In May, 1895, the Macy Manual Training High School was founded by the Trustees of Teachers College, and was so named in honor of Mr. Josiah Macy, the donor of the Manual Arts Building.

The school aims to give a well-rounded high school education, fitting boys and girls for the duties of life. It also aims to give in three years a thorough preparation for polytechnic and engineering schools.

The school is under the direction of the Principal and of a committee of the Teachers College Faculty, consisting of the Board of Directors of the Department of Manual Training and Art Education. The teaching staff includes many of the professors and instructors in the College.

LOCATION, BUILDINGS AND EQUIPMENT.

The school has its home in the buildings of the Teachers College, and shares with the College in the use of the class-rooms, laboratories and workrooms. The location of the buildings is very fine, on the crest of a height of land which commands

* From Teachers College Bulletin, March, 1896.

a view, on the one side, of the Harlem River and the city, and on the other, of the Hudson and the Palisades.

The rooms are large, well lighted and well ventilated; the lecture room and four laboratories of the science department are especially well planned for their purposes; the gymnasium is only partially equipped as yet, but when completed will be as fine as any school gymnasium in the city; the rooms for domestic science and art are in temporary quarters at present, pending their permanent placing in the western wing of the buildings, now being erected. All other manual training and art work is carried on in the Macy Manual Arts Building, which contains three large rooms for woodworking—joinery, carving, turning and pattern making; four for metalworking—chipping and filing and soldering, moulding and casting, forging and machine tool work; two for clay modeling; one for mechanical drawing; one for architectural drawing; one for elementary manual training; two for elementary freehand drawing; and two large studios for advanced drawing and painting. In addition to these is a lecture room provided with a stereopticon, many smaller rooms, such as offices, store rooms, a library, museum, conference room, photography room, engine room and stock room.

The machinery, tools, cases and furniture constituting the equipment of the various departments, have been selected with special reference to the requirements of the work to be done in these departments. Whenever it has been impossible to find such furnishings in stock special pieces have been made.

In the corridors and on the walls of various rooms are many photographs illustrating the history of art. In the museum and scattered through the work rooms are vases, reliefs, models, carvings and casts. The purpose has been to make the building and its equipment complete and in every way adapted to its use.

GENERAL INFORMATION.

ADMISSION.

The classes throughout are open to both sexes.

As only a limited number of pupils can be admitted to the school each year, it is desirable that application for entrance be made as early as possible. Every applicant for admission must present a letter from the principal of the school last attended, and must give satisfactory evidence by an examination that he is fully prepared to do the work of the grade for which he applies.

As the interests both of the children and of the school demand a continuous course, it is desired that no one apply for admission who is not likely to remain throughout the course.

The right is reserved of requesting the withdrawal of any pupil who for any cause is a detriment to his class

TERMS.

The tuition fee for all grades in the high school will be \$150 during the year 1896-97; after that year, \$200. There is also an additional yearly gymnasium fee of \$5.

The tuition fees are payable in advance, one-half at the time of entrance and one-half on February 1.

Pupils entering before January 1 are charged from the beginning of the school year.

In cases of permanent withdrawal on account of illness before the expiration of the period for which payment has been made, one-half of the tuition fee for the time lost is refunded.

Pupils will furnish all their own supplies except the supplementary English and history books.

DEPARTMENTS OF INSTRUCTION.

ENGLISH.

The instruction in English aims to secure for the pupils: (1) such proficiency in the use of the language as is required for entrance to the higher technical schools; (2) some knowledge of general literature and the more elementary principles of criticism; (3) such appreciation of literature as will enable those engaged in technical pursuits to find in books both recreation and culture.

The work in composition will be continued throughout the course. Rhetoric is studied in connection with both the composition work and the literature. It is used as a means of reference for principles applied in composition and literary criticism, not as an isolated subject.

HISTORY.

An entrance examination is required of each student. It covers the chief facts of the constitutional and political history of the United States and the outlines of civil government. Fiske's *History of the United States and Civil Government* are used as a basis for the examination.

The purpose of the course is to show economic and industrial, in relation to constitutional and political development.

First year—American history. The text-books used are Judson's *The Growth of the American Nation* and Wright's *The Industrial Development of the United States*. An excellent library of United States history is available. Short talks are given by the instructor upon the earlier developments in England.

Emphasis is placed upon the proper use of the text-book, the analysis and arrangement of subject matter, and the topical method of study and recitation. Definite instruction is given in taking notes from both lecture and reading. Note books are examined and corrected.

Second and third years—Similar methods are pursued in the second year in mediæval history, and in the third in English history.

MATHEMATICS.

The work of the three years in mathematics is as follows: Algebra, including radicals, quadratics, ratio, proportion and the binomial theorem; geometry, plane, solid and spherical; plane trigonometry, solution of right-angled and oblique-angled triangles.

SCIENCE.

The work in science is arranged in three groups; (1) physical science (physics and chemistry), (2) biological science (zoology, physiology and botany) and (3) geographical science (meteorology, geology and physiography). These subjects are taught for the purpose of giving the pupils both the training in scientific method and the needed information. A student completing the four years' course should have a good working knowledge of the elements of science, and ought, if his mind allows him to accept the spirit of the work, to be closely in touch with the life processes to be seen in the world about him.

GERMAN AND FRENCH.

The course in German and French is based on the requirements for entrance to the Columbia School of Applied Sciences. The pupil is given a thorough drill in the elements of German and French grammar, and at the end of the course is expected to be able to read such easy German as Andersen's or Grimm's *Märchen*, and such easy French as Rambaud's *Petite Histoire de la Civilisation Française*.

MANUAL TRAINING.

I—FOR BOYS.

First year.—Most of the time during the first year is spent in wood-joinery, although a little work in wood-carving is done the last part of the year. The course includes exercises intended to teach the use of the fundamental woodworking tools, the making of the principal joints used in construction and the application of these joints in making useful articles interesting to the pupils. Among these may be found boxes, frames, drawing boards, stools, tables and pieces of experimental apparatus.

The work in carving is almost entirely confined to chip-carving. After a few preliminary exercises pupils are allowed to decorate some of the useful articles made in the joinery course. From time to time during the year special illustrated talks are given to the class on subjects relating to the work in hand, such as standard measurements, cutting edges, structure and growth of trees, lumbering and the preparation of timber, and warping and shrinking of timber and consequent allowance in construction.

Second year.—Six periods each week throughout the entire year are spent in wood-turning, pattern making and foundry practice. Four additional periods the second half-year are devoted to sheet-metal-working. The year begins with a course in wood-turning involving spindle turning, faceplate turning and chuck and templet turning, in which much attention is given to beauty of outline and proportion. Following this a few lessons in foundry work are given in order to teach the

pupils what is meant by draft, and to give them an understanding of some of the fundamental principles of molding. Then several weeks are spent in pattern making, followed by more practice in the foundry. The course in sheet-metal working includes soldering, wiring and many others of the processes of tinsmithing and sheet-ironworking.

Third year.—The six periods a week during the first half-year are spent in forging, the ten periods the second half-year in chipping, filing, fitting and machine tool work. The former begins with exercises in drawing, bending, upsetting and welding and ends with ornamental wrought-iron work and hardening and tempering steel; the latter begins with chipping and filing cast iron, wrought iron, malleable cast iron, steel and brass, and ends with exercises in turning, milling, planing and drilling iron and steel and the construction of some small piece of machinery. Throughout the entire year occasional illustrated talks are given on subjects suggested by the work in hand.

Fourth year.—In the fourth year several options are given the pupil. He may continue in machine tool work, do advanced work in pattern making or cabinet making, or he may take a course in wood-carving or clay-modeling. In fact, with the consent of the professor of manual training and the principal of the school he may elect any one of the advanced courses given in the Macy Manual Arts Building, the work of which he is deemed capable of doing.

II—FOR GIRLS.

First year.—Four periods a week are given to clay-modeling and wood-carving and two periods to sewing.

The work in modeling is intended to familiarize the pupil with some of the typical forms used in sculptured decorations, while the work in carving gives facility in handling the simpler tools. During this first year the carving is usually confined to chip-carving and work in such a style as the Norse that emphasizes the use of the line in decoration.

The work in domestic art during the entire course is designed to make clear the fundamental principles of dressmaking, to give the pupil an appreciation of the value of good workmanship, and to cultivate independence in a necessary branch of home work. It aims to develop the powers of attention and observation in the students, as well as the neatness, accuracy and judgment required in the planning and making of garments. As the course is planned on lines similar to those of the regular College course, it may serve as a basis for further development in that direction. The work of the first year consists of plain sewing. All the stitches necessary for use in dressmaking are taught, and also patching, darning, etc. The raw materials and their processes of construction will be discussed to arouse an interest in textile manufacture and give an appreciation of its importance.

Second year.—Throughout the entire year four periods a week are given to wood-carving and designing and two periods to sewing. During the second half-year four additional periods are given to cooking.

The carving in this year is a continuation of the work of the preceding year, work being done in the Byzantine, Roman, and later styles. Designing is studied with special reference to its application in wood-carving, and pyrography.

In the sewing given during this year the student has some practice on the sewing machine, and models for machine stitching are required; instruction is given in the measurement of the figure; the draughting, cutting and making of simple under-clothing is taught, followed at the end of the year by the draughting and making of an unlined cotton dress skirt and a shirt waist by each student. Talks are given on appropriate and healthful dress; the worth of various materials; color values and harmonies, and other topics of similar relation to the work.

The aim of all the work in domestic science is to train the pupil in the application of scientific principles and methods of work to the problems of the home. The work of this year includes the study of fuels and cooking apparatus, and the principles of cookery illustrated by the preparation of the ordinary food materials.

Third year.—Six periods a week throughout the entire year are given to domestic science. Four additional periods the second half-year are given to domestic art.

The domestic science of this year includes the planning, preparation and serving of meals; cookery for invalids; preservation of food; nutritive value and cost of food; household cleanliness, including such topics as the disposal of waste, ventilation, etc., and also systematic methods in the processes known as housework. The domestic art work takes up the matter of accurate measurements, economical cutting and careful fitting. Each student draughts, fits and makes for herself a lined wool dress skirt and waist. The color and choice of materials; the furnishing and decoration of the home, and other subjects which tend to develop good taste are taken up with the class during this year.

Fourth year.—In the fourth year the pupil may elect advanced work in domestic art, domestic science, wood-carving, clay-modeling, designing, advanced drawing or painting. This plan makes it possible for a pupil to develop, during the last year of her high school course, along the line of her greatest talent or in the direction of some future occupation. The pupil's choice is subject to the approval of the director of the line of work chosen and the principal of the school.

MECHANICAL DRAWING.

The course in mechanical drawing aims to impart a thorough knowledge of the elements of the subject, and stress is therefore laid more upon a comprehension of principles than upon the ability to make drawings intended merely to appeal to the eye.

First year.—The work of the first year is pursued by both boys and girls alike and is planned to develop familiarity with the use of instruments and to furnish working knowledge of orthographic projection, the foundation of mechanical drawing. Students make sketches of simple objects and from these get out working drawings to scale. Time, four periods weekly.

Second year.—At the beginning of the second year there is some differentiation between the work given to the boys and that given to the girls. The former proceed to the more difficult problems in angular projection, intersections and developments and advanced working drawings. The latter give their attention to the elements of architectural drawings. Time, four periods weekly for the first half year.

Third year.—The work of the last two years is for the boys only. For the third year this consists of conic sections, shades and shadows, isometric drawing and study of gearing. The making, by each student, of a complete set of detail drawings of some machine, is an important part of this year's work. Boys fitting for the Columbia School of Applied Sciences (School of Mines) are well prepared at the end of the third year to enter upon the technical courses of that school. Time, four periods weekly.

Fourth year.—Machine design and linear perspective for the fourth year afford abundant opportunity for the application of the principles learned during the previous three years. Time, four periods weekly.

FREEHAND DRAWING AND PAINTING.

First year.—The work in freehand drawing for the first year consists of drawing and sketching in outline from simple geometrical solids, natural objects, furniture, plant forms, etc., studies in the simplest masses of light and shade from solids and still life. The aim of this year's work is to teach the students to see, and correctly express, either in outline or by the simple masses of light and shade, any common object. Time, four periods weekly.

Second year.—The work of the second year is a continuation of the work of the first year. It consists of a series of quick sketches from solids, casts and still life, more advanced work in light and shade from groups of solids, casts, and colored objects, and simple sketches of out-of-door subjects. The object of this year's work is to give greater facility in sketching, and to teach the students more fully the principles of light and shade, and their importance in the representation of an object or group of objects, and the importance of the careful study of values and proportion. Time, four periods weekly.

The work in freehand drawing in the first and second years is class work, the entire class working from the same or a similar group at the same lesson. Homework in these subjects will be required from each student.

Third year.—In this year's work special attention is given to the needs of each student; the instruction and criticism being mostly individual, the work is so arranged that students may pursue that part of the work in drawing that bears most directly upon the work for which they are preparing. The regular work of the class consists of drawing in charcoal, pen and ink, and with the brush in monochrome from casts and still life. Time, four periods weekly, first half-year.

Fourth year.—The work of the fourth year is elective. All classes of the art department, including advanced work from the antique, painting in oil and water colors, pen and ink drawing, clay-modeling and design, are open to the students of this year, and afford every opportunity for serious work in any of these subjects. The instruction and criticism throughout the four years are given by special instructors in each subject, and the art work of the entire course is under the supervision of the director of art work in the College.

PHYSICAL TRAINING.

The aim of this department is to secure for the students health and strength, to give them grace of movement, and to teach them the importance of physical development as a part of a complete education. Time, two periods weekly.

All members of the School before beginning their gymnastic work must undergo a thorough physical examination by one of the College physicians. A record of these examinations is kept on file.

Girls are required to have the gymnasium suit adopted by the College. Arrangements have been made with Hulbert, Bros. & Co., of 26 West 23d Street, New York City, to furnish these suits for \$4.25 each. They should be ready before gymnastic work begins. In ordering, Teachers College should be mentioned, and the following measurements given: neck, bust, waist, inside seam or sleeve, outside length of skirt from waist to knee, inside length from waist to floor.

Boys must provide themselves with sweaters. All students must have low heel-less shoes, with or without rubber soles.

MACY MANUAL TRAINING HIGH SCHOOL.—OFFICIALS AND INSTRUCTORS.

EXECUTIVE OFFICERS.

WALTER LOWRIE HERVEY.....	<i>President</i>
CHARLOTTE LOUISA WILLIAMS.....	<i>Principal of the College</i>
VIRGIL PRETTYMAN.....	<i>Principal of the Horace Mann School</i>

HEADS OF DEPARTMENTS.

JOHN FRANCIS WOODHULL.....	<i>Natural Science</i>
ELIZABETH ADELAIDE HERRICK.....	<i>Art Education</i>
CHARLES ALPHEUS BENNETT.....	<i>Manual Training</i>
JOHN FRANKLIN REIGART.....	<i>History</i>
FRANKLIN THOMAS BAKER.....	<i>English Language and Literature</i>

TEACHERS.

JOHN HENRY MASON.....	<i>Constructive Drawing</i>
EDWARD HOWARD CASTLE.....	<i>History</i>
HELEN KINNE.....	<i>Cooking</i>
MARGARET STANTON LAWRENCE.....	<i>Physical Training</i>
MAY BELLE VAN ARSDALE.....	<i>Science</i>
WILLIAM FREDERIC VROOM.....	<i>Woodworking</i>
MARY SCHENCK WOOLMAN.....	<i>Sewing</i>
JENNY FRANCES LEWIS.....	<i>Freehand Drawing and Modeling</i>
CHARLES EARL BILKÉ.....	<i>Mathematics</i>
ELLEN YALE STEVENS.....	<i>English</i>
ALBERTINE KASE.....	<i>German and French</i>
KATHERINE MORE COCHRAN.....	<i>Latin and Greek</i>
KARL VON RYDINGSVÄRD.....	<i>Wood-Carving</i>
VINTON SHERMAN PAESSLER.....	<i>Metalworking</i>
MARY ROGERS.....	<i>Wood-Carving and Designing</i>
WILLIAM SMITH ROBINSON.....	<i>Drawing and Painting</i>
JEANNETTE BLISS GILLESPIE.....	<i>English</i>
CHARLES MCCOY BAKER.....	<i>Mathematics and Latin</i>
RICHARD ELWOOD DODGE.....	<i>Geography and Geology</i>
CHARLES HENRY WESTCOTT.....	<i>Woodworking</i>
IDA BENFEY.....	<i>Reading</i>
GRACE LYDIA BERNEY.....	<i>Freehand Drawing</i>
ROBERT EDWARD LEE DINWIDDIE.....	<i>English</i>
ANNIE BOWLES MCKINSTRY.....	<i>Freehand Drawing</i>
EUGENIE MENUT.....	<i>French</i>
ALETTA VAN WYCK SCHENCK.....	<i>Sewing</i>
LUCY HESS WEISER.....	<i>Manual Training and Mechanical Drawing</i>
ANGIE HEARTFIELD.....	<i>Freehand Drawing</i>
MARY SEWARD.....	<i>Physical Training</i>
JAMES JARDINE.....	<i>Physical Training</i>
EDITH MCINTYRE.....	<i>Cooking</i>
MATILDA GARRETSON REA.....	<i>Sewing</i>
CAROLINE WHITTIER CABOT, M. D.....	<i>Examining Physician</i>
JOHN PERRY SEWARD, A. B., M. D.....	<i>Examining Physician</i>
EDITH KATHERINE EDIE.....	<i>Secretary</i>

(e) REPORT OF A CONFERENCE ON MANUAL TRAINING, HELD AT
TEACHERS COLLEGE, MAY 18TH, 1895. *

In March, 1896, a "Bulletin" was issued by the Teachers College consisting of forty quarto pages entirely given to the report of a important meeting of practical Manual Training Teachers held at the College in May, 1895. In the papers read and discussions which followed there is much of value. Want of space restricts quotation to a few extracts. From the introductory page, the following explanatory paragraphs, are taken :

TEACHERS COLLEGE BULLETIN.

The theme of this number of THE BULLETIN is manual training considered as subject of instruction in the elementary school.

* * * * *

The broad subject of manual training in secondary schools, it will be noted receives only passing notice in the text, though some of the exhibits cover high school work. This is due to the necessary limitations of a conference called to discuss a single set of problems. Manual training in the secondary school is, however still a live theme, second to none in its importance. How to organize and correlate it in general; and how to make a place for it in the course of a boy preparing for college in the classical course, or even in the Latin-scientific and modern language courses, are questions ignored by the Committee of Ten, and for that reason they are all the more in need of study by those who accept the committee's general scheme, but who would modify it in important particulars. Some important experiments in this field are now in progress.

President Harvey, of the Teachers College, after a few cordial words of welcome to the Conference, introduced as "one whom all progressive teachers are proud to regard as a fellowcraftsman-Superintendent C. F. Carroll, of Worcester, Massachusetts," who then read the following paper, entitled: "JUST WHAT SHOULD MANUAL TRAINING DO FOR THE CHILDREN IN THE ELEMENTARY SCHOOLS?"

After showing in his opening paragraphs, that the later physiologists and child observers, Preyer, Ribot, Darwin and Galton, claim that muscular movements are but the results of mental activity—that between brain and muscle there is constant interaction, he proceeds as follows:

I have here attempted to suggest that the abundant use of our locomotive power and the muscular sense is a most important factor in the acquisition of the enormous wealth of knowledge gained by every child before he is five, or even three, years of age. The school has, until recently, generally done violence to the principles already enumerated and suggested.

REPRESSION THE KEYNOTE OF THE OLD METHODS.

Every variety of movement has been repressed, and the emotions, and stronger moral impulses accompanying them, have been held imprisoned during school hours. Neither the five senses, nor the muscles of the hand were much in use in the regulation of the school-room. Pupils were confined to the use of dull memory exercises connected with symbols and empty formulas. Even the educational system of Greece provided for the physical man, and for the full training of his muscular skill, at some point. The training of the Middle Ages was at least manly; because it always implied muscular training. The pitiable spectacle of a so-called intellectual man was first seen in the sixteenth century. (It is hoped that he may entirely disappear in the twentieth century.)

Montaigne and Rousseau first sounded the note of rebellion against the intellectual dummy, and proclaimed that a scholar was something different from a man

Froebel first dealt with the question in elementary and concrete form, and proved that education is a process of doing.

The force of these ideas has gathered momentum, and has become irresistible and often violent.

MASSACHUSETTS REMODELS ITS SCHOOL CURRICULUM.

In Massachusetts the legislature has, within a few years, abruptly remodeled the school curriculum. It first added drawing, then singing, physiology, manual training; physical training will probably be added to the list during the present year.

The educational philosophers of the old creed are left far out at sea, and are vainly attempting to make some safe harbor. This is not a movement of certain educators. They may become an occasion of hastening a change, but the movement in favor of the use of the senses, *sic* in number, is a part of an evolution, a part of our civilization. We have praised and blamed men as being responsible for this mighty movement, but the legislature of Massachusetts has had more to do with this sudden upheaval than all the educators in America, and this body only represents the solid and clear convictions of the best home life and judgment of the best citizens of our land.

But we should, at least, expect to best answer the question, "Just what should manual training do for the children in our elementary schools," by a visit to the school-room itself. Many who speculate upon this question forget to apply to this source for information.

IMPORTANCE OF THE KINDERGARTEN IN THE NEW EDUCATIONAL METHODS.

The very best place to study the effect of manual work upon children is in the kindergarten. A child without hands would sit stupidly idle in this busy community. Hands and arms are in use in the first song that is sung. In the games every muscle is put into use. Children here learn to run and walk and dance gracefully. An easy carriage, once gained, is a permanent acquisition, and can never be acquired except in childhood.

The kindergarten child masters the elements of geometry by the use of blocks, and in clay modeling. The straight lines, parallel lines, the perpendicular, the square, the cube, the cylinder, and other geometrical terms that are often almost meaningless to the college graduate, are parts of his familiar language.

From the mass of muscular movements of the entire arm and hand the finer movements of the fingers are gradually attained and a part of the energy hitherto dissipated in aimless movement is turned to use in various forms of concentrated effort in sewing, weaving, and various other occupations.

Invention and independent original effort are the main aim of all that is undertaken. A kindergarten child relies on himself, is full of ideas, asks questions, is truthful, and is happy in school and out of school. He takes care of himself at home, and is always full of business.

The best effect of manual work, as shown in the kindergarten, is seen in the moral power it exerts. Bodily occupation is everywhere elevating and healthful, and morality and religion are built upon industry. The child who employs his hands intelligently in the schoolroom, in due proportion, is satisfying one of the most powerful instincts within him. He is cheerful, he is a picture of health, and his best emotions and impulses are easily kept active.

Hand-training, as seen in the kindergarten and in the manual-training high school, is rapidly becoming a part of the school system in all parts of the country, but in the elementary graded schools comparatively few cities have yet made a beginning, even in grammar grades. The Committee of Fifteen goes one step farther, and makes a place for manual training in the two upper grades of the grammar school. We can understand why a legislature should propose to begin manual training at fifteen years of age better than we can understand how leaders in educational thought could propose that it be introduced at thirteen.

VALUE OF HAND TRAINING IN ELEMENTARY SCHOOLS.

In estimating just what manual training ought to do for children from six to fourteen years old, I should wish to add all the general suggestions made above in connection with the kindergarten. The *sixth* sense should be used in connection with the other five, at some point, in almost every hour of school life, because this rule applies to the child out of school, and because bodily activity is essential to health, happiness, and good morals. But beyond this there are additional reasons, that should be carefully noted. A considerable degree of hand-skill, in some directions,

gives a child an ability to interpret the vast industrial world about him. All the forces that operate with automatic precision, in adding wealth and comfort to the home, become alive to the boy or girl who can bring forth one finished artificial product. A child who cannot use his hands to some good purpose is usually a monstrosity, though he knows Latin, Greek, and Hebrew. (Rabelais' picture.) It is an old saying that a king should know a trade.

HAND TRAINING INCREASES POWER OF ATTENTION.

Again, a boy who can handle tools and convert raw material must have ideas, and can usually concentrate his attention continuously in any direction. To the psychologist, attention is another term for *change*. The average teacher has not learned that in concentration of attention the point of view is frequently changed, or that new material is constantly brought into account and in some way connected with the subject in hand. For instance, the study of Mexico implies that information is to be gathered and organized. This information relates to form, slope, elevation, temperature, productions, division of labor, and exchange of commodities, and all this is associated with some facts in history and sociology. This is a very different thing from bounding Mexico and naming its principal towns. Attention can be held longer and more easily in the former case, because the associations made are more varied and more strongly affect the interest or the emotions. In the intelligent use of implements of any kind, the material undergoes constant change, and a boy can work for hours where, under other conditions, he would be weary in thirty minutes. A child may study geography or grammar for years and not gather ideas, nor be required to employ those he already possesses. This is hardly possible in manual exercises.

RESOURCES OF THE HAND TRAINED PUPIL.

Another reason for the systematic use of the hand is, that it increases indefinitely the resources of the individual. The boy who works regularly with tools, the girl who learns sewing and cooking, and all children who, in some way, connect drawing, shop work, and the laboratory, botany, and mineralogy—all such, with the children of the kindergarten, have a round of pleasureable employment in and about their homes. The use of these resources early gives them an individuality that we name character, sets them at work independently, and makes the process of education, out of school and in, a unit.

VALUE OF HAND TRAINING AS AN AID TO DISCIPLINE.

The final consideration that I offer is from the moral side. The profitable and natural forms of effort suggested in all I have said afford a basis for a true theory of discipline. Restraint has often been confounded with discipline. But restraint is only the holding of effort in check, while true discipline is the regular employment of energy. A well-disciplined child is not a well-whipped, subdued, cringing being, but one who cheerfully gives his best effort to his present duty, at all times, and with the minimum oversight on the part of others. It should be added that manual skill and labor favorably affect the emotions, preserve the disposition, and give elasticity and health to the entire physical system. Monotonous attention to the abstract does much to ruin both the health and the disposition of the children of the public schools.

RESULTS IN ONE SCHOOL OF TEN YEARS TRAINING IN INDUSTRIAL ARTS.

I have in mind a school where, for ten years, children had a full sloyd course, beginning at six years of age. Drawing and clay modeling were also a part of the course during most of this time. Inventional geometry, with mechanical drawing, was added at ten years, and sewing and cooking for boys and girls at about eleven. Some laboratory work was carried on in connection with both chemistry and physics, and in elementary form these two latter subjects were taught at eight years. The particular order and amount of these different subjects varied from term to term, but at least an hour and a half out of every five was devoted to this line of work. These children entered the kindergarten at three and four years of age. At twelve and one-half years they were ready for the high school. At sixteen, the first class of two entered college, and a year later, the second class of ten applied for admission to the leading colleges. All except three were admitted creditably.

MANUAL TRAINING COURSES IN NO RESPECT DELAYED PROGRESS IN OTHER STUDIES.

The children were from average homes. Throughout the school, pupils seldom failed to pass regularly from one class to another. Teachers visited these schools by thousands to see the *common school* work, especially the work in arithmetic, reading and literature. I give these details to show that manual work does not interfere with the progress of the so-called common school studies, and that manual work, properly managed and related to other subjects, really hastens the child's progress in all directions.

These children were *all* readers. Records carefully kept show that, from the fourth year, every pupil read a large number of selected books. These children were familiar with our poets, and were generally intelligent. Many were excellent workmen, and skillful cooks. In all this time there was but one case of corporal punishment, and that was at the urgent request of the parent. The community was originally skeptical concerning the kindergarten and manual training. At the end of the period the sentiment of the city was practically unanimous in favor of these lines of training, and the entire State has generally accepted the principles involved.

As already stated, the weak point in our educational philosophy is that it lacks the support of clear, abundant evidence, gained in the school-room. What children can or cannot do, is not to be determined empirically, but by patient observation and experiment. The Teachers College ought to do much to settle a few questions about which men have hopelessly quarreled. There are a few school systems that ought to be *written up*, where the same kind of evidence can be easily secured.

MANUAL TRAINING IN NO RESPECTS AN EDUCATION IN ITSELF.

It is to be regretted that, in some quarters, manual training is thought of as an education in itself. A carpenter or a builder is not necessarily an educated man, any more than is a one-sided specialist in Greek, or mathematics, or music. A so-called manual training is only one factor in an education, and should not be made to stand out in any undue relief.

To illustrate: I recently visited a manual training school where the pupils were all foreigners. American boys would not think of entering this school. Those in attendance expected to learn a trade. There was at once a class feeling, and the very best object of manual training was defeated by the plan of organization.

IT IS ONLY ONE OF THE MEANS OF IMPARTING AND GAINING EDUCATION.

In my judgment, manual work should take its place as a part of the high-school course, and should never be made its principal feature. In some cities, pupils continue their regular work in the classical or English courses, and do six or eight hours of shop work and drawing, weekly, in addition. The amount of English, mathematics, or Latin may be somewhat reduced, if necessary, and the student may be five years in completing his high-school course, but his diploma does not differ from that of his neighbor, except that he is credited with a full manual course. In this scheme most of the shop work is done out of regular school hours. This is practicable, because the regular school day generally closes at 1 P. M. On two days the boys spend three hours in the afternoon in the shop. This is not a severe strain on a healthy boy, as the work is one form of recreation, and the morning tasks are lightened to suit each individual case.

Under such a plan there can be no class feeling. Many a wealthy parent would be glad to have his boy take such a course of hard work, if it did not seriously interfere with college preparation, and every boy's opportunity in life would be indefinitely advanced by such a training as is proposed.

Such an arrangement would prevent class lines, preserve the enthusiasm of the high school as a whole, and tend to make popular this element in the education of a complete American citizen.

PRESIDENT HERVEY.

The refreshing and inspiring address that we have just listened to reminds me of what one of our philosophers in America says—that "a man who thinks only is only half a man; it is only when he acts that he becomes a whole man." This manual training was once only an idea, and it is only within the memory of even the youngest of us here that it has been possible for one to draw on such rich funds of

experience as Mr. Carroll has drawn upon this morning, and tell us not what manual training would do if it were introduced, but what manual training has done, not only in one place but in many places.

I had hoped to have here this morning a man who could tell a story about manual training and its effect upon young men that would parallel, I think, the account given by Mr. Carroll of the effect of manual training upon young children. You have heard about the plan of the university where a great teacher would be at one end of the log and a fortunate pupil on the other. I have never heard any objection to that plan, except that it was not economical. Great teachers are scarce, and you would have to lodge more than one pupil on the other end of the log in order to make them go round. Now there is in New York an institution which more nearly approaches that plan than anything I know of, a school limited in numbers and fortunate in having as its pupils a group of young men destined to become influential in the welfare of the city and the nation. Manual training has been made one of the fundamental elements in the curriculum of this school. The fruits of that system have been very remarkable indeed. I may say that this Manual Arts Building was the gift of the mother of one of those young men, who, stimulated by a feeling of gratitude for what manual training had done for him, erected this noble building as a means of helping others in the same way. I hoped that Mr. Browning might have been well enough to be here this morning to tell us something about his experience with those young men, but unfortunately he is ill. He sends to us his regrets, mentioning the fact which I have referred to as something that he would have been glad in person to present to you to-day.

AFTERNOON SESSION.

INTRODUCTORY REMARKS.

[By CHARLES A. BENNETT, Teachers College.]

It gives me pleasure to welcome to the Teachers College this afternoon so many teachers interested in manual training. We are grateful to you, and to some who are unable to be here to-day, for the heartiness of your co-operation in the work of this conference as manifested by your prompt suggestions with regard to the topics for discussion, the number and character of the exhibits you have sent, your readiness in accepting assignments on the program, and your presence here to-day. The fact that some of you came from as far east as central Massachusetts, and others from as far west as Ohio, and as far south as Maryland, is an indication of the nature of your interest in the subject announced for discussion.

MOTIVE OF THIS CONFERENCE.

This conference was called for a particular purpose: to decide more definitely what ought to be accomplished by manual training in the elementary school, and then to find out the means by which what ought to be accomplished can be accomplished. This morning we considered the first of these propositions; this afternoon we will discuss the second.

While studying the exhibits in the Macy Building I have been impressed with the fact that no two teachers there represented use the same course of instruction for any given grade below the eighth; that hardly any two use entirely the same tools in any given grade; and that there is almost as much variation in the size, quality, and kind of material employed. Yet all have the same general purpose in view—the educational development of the child. There are a few principles that all, or nearly all, have in common, and it is especially to increase the number of these common principles, not to emphasize differences, that we are gathered together this afternoon. We all know that we are very ignorant on this subject, and that our ignorance accounts in part for the difference in our courses of instruction. If we compare experiences, we may be able to answer some of the questions that have been puzzling us, and then to modify and improve our courses of instruction.

TWO SUGGESTIVE EXHIBITS SHOWN AT CHICAGO WORLDS FAIR.

At the World's Fair in Chicago, in the building erected by the French Government, was a small exhibit, apparently from an orphan asylum, consisting of a few pieces of work representing the elements of each of the following trades or occupations: tinsmithing, plumbing, blacksmithing, machine tool work, joinery, sculpture, wire-working, knitting, sewing, weaving, embroidery, printing, engraving, and book-binding. It was apparent that in the school from which this exhibit had been

sent, the elements of fourteen different trades or occupations were taught, each involving tools and materials peculiar to itself—and this, too, in an elementary school. In another building at the World's Fair there was a manual training exhibit from an elementary school showing that only one kind of material was used in all the grades of that school. The tools in this case were few in number. Which of these two schemes of manual training is the more desirable? Is either one satisfactory? How many and what kinds of materials should be employed in the various grades of the elementary schools? What tools used in each grade? What principles should govern the relation of tools and materials? Should boys and girls be treated alike?

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The first paper read in the afternoon session was entitled :

SHOULD BOYS AND GIRLS BE GIVEN THE SAME KIND OF WORK IN MANUAL TRAINING?

[By MAXIMILIAN P. E. GROZMANN, PD. D., Supt. of Workingman's School, New York City.]

I feel that it is impossible at the present time to speak with any degree of authority on the question whether boys and girls should be given the same kind of work in manual training. It is true that some attention has been devoted to this question and to the more general problem of sexual differentiation; but only a very small beginning has been made toward the solution of this great problem.

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After reciting a few instances of the elementary work in the earliest grades in paper work, in modelling, and in sewing he concludes :

To sum up the general results of all these observations in different lines: The work of the boys is stronger, firmer, more practical; my theory is that they possess a better appreciation of shape and purpose, and that they show more originality. The girls, however, do neater work, more accurate in details, more artistic or more decorative, while they are less constructive and somewhat weaker in execution.

Without wishing to base large generalizations on these few facts, I feel safe in saying, even at this early stage of investigation, that they seem to prove a differentiation of aptitudes in the two sexes, even in young children. This differentiation is determined by two factors: First, *the sphere of interest*. This being somewhat different in boys from what it is in girls, it would seem natural that their manner of work should vary accordingly. Second, *the difference of physical strength*. Practical teachers know that in many instances the physical strength necessary for doing any kind of manual work is a matter of very slow growth in both sexes, and that things which appear to be easy for older children are often very difficult for children of six, seven, or eight years of age, both from lack of strength and of power of concentrated attention and co-ordinated muscular activity. Considering that the physical development of boys differs from that of the girls in point of strength and concentration, it seems only natural that their work will be largely influenced by these conditions.

On the basis of these observations I will venture to outline a few practical suggestions which, it seems to me, ought to be considered in arranging the course of study in schools where manual training has been introduced.

(1) In *art work* it does not seem necessary to make much difference between the two sexes, at least in elementary grades. There should be some kind of difference made in the higher grades, but what its character should be is as yet difficult to determine. I have found that the boys select more characteristic models for modeling; for instance, that they desire to model strong features, faces of a decided character, while even here the girls prefer decorative models. But to what an extent a general statement can be made on this basis appears doubtful at the present time. That the girls should be given as much opportunity to model and draw as the boys is now an established principle. We have had women sculptors of renown, so that the art-faculty cannot be denied to woman, and girls ought to be given the opportunity of developing their talent in this direction.

(2) Even with regard to *constructive drawing (geometrical and architectural drawing)* it seems that little difference between boys and girls need be made.

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(3) As to *sewing* and the *domestic arts* in general, it appears advisable to confine that work largely to the girls in the first place, because the home constitutes the

principal sphere of interest for woman, and secondly, because the work in the domestic arts requires relatively less physical strength than the work of the shop. Boys, especially the older ones, take very little interest in work which does not require the application of their full strength. Nevertheless they should not be excluded from sewing. In the two lowest grades at least, as you have seen, the interest of the boys in this work is indeed equal to that of the girls.

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(4) In *geometrical construction* proper, I see no reason why boys and girls should not do exactly the same work.

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(5) Regarding other *constructive work*, almost the only kind applicable in the girls' classes appears to be the elementary carpentry work which we do in our lower grades.

In addition to this it appears advisable that a small quantity of real shop-work should be given to girls. Simple hammering, the driving of nails, is an art which many a woman would learn to great advantage. Then artistic wood-carving, provided the wood which is used is light enough so that it does not require too much physical strength, seems to be quite in the line of girls, while the more difficult and heavier carpentering and metal work is fitly reserved for the boys.

The question whether different kinds of work should be given to boys and girls, is merely a part of a much larger problem regarding which we as yet know very little. The larger problem is the study of sexual differences, both physiological and psychological, between boys and girls.

At the present time, when the woman's question is receiving such large attention from all points of view, when the claim is advanced that there is practically no difference between man and woman, the problem whether there is any such difference, and how early and in what direction it asserts itself, becomes more and more urgent. It has been shown that in the period of adolescence, at any rate, boys and girls do differentiate to such an extent that not only their manual work but the whole range of their activities as well as their treatment should in some way be different. Many questions have been proposed in regard to this problem, many experiments have been made, and many tests have been introduced, and yet we are at the present time almost as ignorant with regard to it as we were ten years ago.

I have this afternoon confined myself to a very few simple and practical observations and statements. If you will make it your practice to record your own observations as to the differences between boys and girls in their attitudes toward the work of the schoolroom, in the execution of the same, their characteristic preferences and so on, you will help in bringing about the solution of this great problem. When a large number of such observations shall have been carefully recorded, collected, grouped, and compared, the problem of whether boys and girls should be given different kinds of work will be brought nearer to its solution.

MANUAL TRAINING FOR THE FIRST FOUR YEARS IN SCHOOL.

[By STELLA SKINNER, Supervisor of Drawing, New Haven, Conn.]

Before we can have manual training proper we must have much preliminary general training. A little child finds itself possessed of a body with its various members, and the first thing which he must be helped to do is to gain control of his physical self—to understand himself as a whole. The higher powers must obtain possession of the lower, and this is what he must be helped to do. How can we help him? How can he gain this control of himself? How can he bring his physical self into harmony with his spiritual self? Movement exercises tend toward this. Rhythmic movements of different kinds will help very much in expressing his feeling and his thought through action, through movement. Rhythm appeals so strongly to children—rhythm in music, as in singing and marching; rhythm in poetry, in the swing of the verses, and rhythm in movement. The best training is that which combines all these. One great value of the games and the marching of the kindergarten is that they help the child to bring himself physically into harmony with his environment. So many ideas may be gained through this one thought of rhythm!

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Expression should be free at first; the child's spirit should be free, his thought free and spontaneous, and it should find free channel for expression. This thought

and expression should be gradually guided, moulded, influenced in the right direction, but never repressed, for it is the very foundation of strong, original effort so vitally important in all lines of work. We must "quench not the spirit"—rather must we nourish it through thoughts good, and true, and beautiful. Mr. Carroll spoke such a true word this morning when he said that much of the so-called order in the schools was nothing but a system of repression. It is so in some schools yet to-day, more than we realize perhaps. Only that order is worth having which is voluntary—any discipline in a schoolroom which is the result of force is not worth mentioning. * * *

We must have mental and visual accuracy before we can have manual accuracy; we must train the eye to see, not merely to look. Looking is purely a physical operation, but seeing is mental as well.

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THE NEED OF BOTH MANUAL AND ART TRAINING.

We need to train our boys and girls to be prompt, concise, clear-headed, quick-witted; and this is where the discipline of manual training is invaluable; but we need also to train them to be gentle, courteous, responsive to beauty in all its forms; and thus art-training joins hands with manual, and they move together, side by side, co-ordinate, each supplementing the other, "not like to like, but like in difference." This thought is beautifully expressed in the exhibit from St. Paul. From the mechanical standpoint the work seems good, and from the art standpoint it is very satisfactory; the idea of proportion in it is well kept, the feeling in the curve is good, and it is in all of these lines that the art training is so advisable in connection with the manual. I simply speak of this one because I cannot speak of all, and because this idea of proportion and feeling for beauty of line seemed especially brought out in that exhibit from the elementary schools.

We must have drawing for the development of free thought and the gaining of power; and we also need manual training for the control and the direction of power. Is not much of this criticism of our work with the children just? Have we not demanded accurate expression without demanding accurate impressions? Have we the right to expect this before we have guided the child toward accurate thought? Should we not begin with exercises to develop clear ideas, but which do not tax these nerve extremities, and do not require much manual power? For example, exercises in location or placing of models and objects—placing in the centre of the desk, at the front, at the back, left and right—getting definite conceptions without demanding a great deal of skill at first. Exercises in free movement, in different directions, getting our control first near the nerve centres and gradually working down until finally the skill and the power is found here (at the ends of the fingers). Exercises in measurement, to give clear ideas as to size and direction; exercises in folding, for location, direction, and construction, and in language; all of these develop mental power and clear concepts without taxing the accessory muscles too much. We must recognize the fact that the value of first expression through any medium lies in the mental process involved, not in the result. The very effort to tell what we see or feel enables us to see or feel with greater power. Therefore, expression is a vital necessity to growth. I was so pleased to have that point made strong this morning, that the more we do ourselves, the more we are enabled to appreciate the work which has been done by others, perhaps by past generations. That is the supreme value of the study of historic art, which we are now bringing into the schools; the child, through this study, is coming to know the best that has been thought and done—just as through literature he becomes familiar with the best thought and feeling.

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The thought which I should like to leave with you concerning the work of the first four grades is, to begin with free thought, with spontaneity, and work gradually through freedom of thought and expression into accuracy of thought and expression.

MANUAL TRAINING IN THE FIRST FOUR GRADES OF THE WORKINGMAN'S SCHOOL.

[By JESSIE WRIGHT.]

Manual training in the Workingman's School begins in the kindergarten, where the child illustrates some mathematical truth or forms objects which his infant mind invests with life and beauty. Later the demand of the child is for real material—not one kind, but a variety. As he comes in contact with all kinds of material

in his out-door existence, and as we wish to connect his school life with home life, we do not limit ourselves to one series of manual training, as, for instance, wood-work, and complete that series before taking up something else. Our plan is, rather, to introduce many kinds, but all coördinated toward a common end, *i. e.*, an all-around natural development.

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SEWING IN THE PRIMARY SCHOOL.

[By MARY SCHENCK WOOLMAN, Teachers College.]

I am so frequently asked if I think it is right for children to have sewing the first four years of school, that I shall spend a short time in giving a few of my reasons for saying, "Yes, I do believe in it."

If we can find anything directly educating, which appeals strongly to the interest of little children, we have certainly gained a point. Sewing does certainly appeal to the interest. I always find the children, both boys and girls, fond of it and enjoying their lessons. It is one of the first things little children want to do; they see their mothers sewing and immediately want to try. I never heard of any mother who thought it was bad for the child—it was always for herself. The children certainly learn easily in these first four years.

WHY AND HOW SEWING SHOULD BE TAUGHT IN THE CLASS.

But the question is not so much how interesting it is to them, nor how quickly they may learn, as how fundamental the lessons are. Here the way of teaching it makes a vast difference. It can be made a powerful means of training the attention and observation.

If the children are taught in the old way of showing each child, only the imitative faculty is cultivated; the child should be taught by a demonstration of the subject to an entire class at once. It requires close attention and observation on the part of each child to understand this demonstration; then she must go to work, and before her will be the evidence of how well or ill she has attended, or of how her fingers obey the brain. Could there be a better proof of error? Even a child can see and acknowledge his faults when thus shown him.

This way of teaching generates the power of expression, for the children should be closely questioned on what they have done, how they have done it, and the use of the process and result. Gradually they will find in their homes, and in going about in the world, such close connection between their work at school and outside that they will desire to tell of it all; and beside the power of expression will be generated an interest in work generally which will be a beginning of sympathy with society, with work and the worker, which cannot be begun too young. This feeling is greatly aided by another part of the work, for all children should understand the manufacture of the tools and materials they are using. This is of great interest and help to children, in keeping their eyes open wherever they go.

THE LESSON IN WEAVING.

In the first primary grade, in the lesson on weaving, I find the greatest interest. We have our own little loom for demonstration. First, the way is prepared without the loom, and the next lesson the loom is brought in and its parts and workings discussed while certain children do the work on it and give the lesson. After seeing the loom but once, one little fellow at the following lesson gave me a drawing he had made of it from memory. On one sheet he had warp represented by long vertical lines, woof by horizontal lines—but the woof differed from the warp by having the continuous thread turning back for selvedge, and at the side of this he wrote "selvedge" phonetically. Inside was the loom, with frame, treadles, harness, warp-beam and web-beam complete—he had even marked the warp-threads in blue and white crayons, that being the color of the threads in our own loom. It is a very usual thing to have the children say, "When will you tell us of needles, when of silk?" etc.—showing their interest in the manufacture.

This work is fruitful of sense training; the touch becomes acute in work as well as in recognizing wool, silk, cotton, linen; the eye is trained in measuring distances, the color sense can be developed to affect both the æsthetic and spiritual nature; if, as many educators feel, a complete sense training is desirable and necessary, sewing has many arguments in its favor.

Further, as soon as the children can, they should make little useful articles of various kinds, for it makes them useful at home and develops a desire to do.

METHOD OF CLASS TEACHING.

All this need not injure the eyes nor require too exact adjustment. Begin the lessons in the first primary grade with drills to teach the class in unison how to thread needles, hold needles, use thimbles, hold work, etc. When material is used, take that which gives the least resistance, such as canvas and wool; the canvas should not be fine, but a coarse jute; this can be used several months. Let a lesson be carefully explained for one or two lessons before making a stitch, then make the stitch on a demonstration frame before the children, draw it on the board, explain it and its use; let the children draw it on the board and criticise each other's work. After this preparation difficulties will have disappeared, as will be shown by the ease with which they go to work. Use coarse needles and fine thread when they begin to work on muslin, and give only the simplest geometrical designs to follow—no flowers, animals, nor intricate patterns. Let the stitch be as large as they desire, provided it is accurate and will serve its purpose. I find an entire class, in this way, will do about even work, and will accomplish much in a short time, the difficulty really being to keep them to coarse enough work, so that later they may readily and without injury to themselves pass to finer materials and processes.

VERY EARLY TRAINING DESIRABLE.

One more question—"Will they not learn as easily later?" I find they do not. Boys beginning sewing in fourth and fifth grades have great difficulty with their hands, and have lost the benefit of the early training they should have had. I remember a class of fifth-grade boys to whom I had to give regular muscle drill before they could get the fingers to go in position; it would take them a long while to make their hands as supple and dextrous as first-grade children's are in a few weeks. Girls, too, I find, have difficulty in beginning later on.

At the Waldorf exhibit of sewing a few weeks ago, there was a book of model work. All the first part of the book was devoted to the regular course; further on in the book was another set of models, headed by the words "This is for the benefit of those educators who do not believe it is worth while to put sewing in the public schools, claiming that later the girls will take to it naturally; these models show how they took to it." Then followed the series of models, a crying argument for the need of early training.

The reading of the papers at each session was followed by an open discussion. These discussions were of general interest. At the close of the discussion which followed the reading of the above paper Mr. Bennett introduced the next speaker as having been the originator of the kind of manual training work known as "slip work."

MANUAL TRAINING FOR THE SECOND FOUR YEARS IN SCHOOL.

[By CHARLES R. RICHARDS, Director of Department of Science and Technology, Pratt Institute, Brooklyn, N. Y.]

The Commissioner of Education, Dr. William T. Harris, has made a statement somewhere that of every hundred pupils in the common schools only about five go on into the high schools; and in one of the last reports of the Bureau of Education it is stated that of the 14,700,000 pupils in the schools of the United States, less than 700,000 go beyond the common or the grammar school period; 14,000,000 being in the primary and the grammar grades. These figures indicate at once the vast importance of all grammar-grade work as relating to the education of the country as a whole, and this is certainly as true of manual training as of any other subject. The educational value of manual training, its value in inculcating habits of painstaking and persistent application is pretty generally recognized, but it is apparent, if this subject is to reach its true value and to affect largely the educational work of the country, it must reach these ninety-five pupils whose education stops at the grammar school as well as the five pupils who go beyond.

THE INTRODUCTION OF MANUAL TRAINING IN HIGH SCHOOLS AND IN GRAMMAR SCHOOLS INVOLVES VERY DIFFERENT PROBLEMS.

The grammar school problem is not only the most important problem that manual training has to deal with, but it is by far the most difficult problem. It is very much more of a problem than the high school problem. The problem of teaching

shop work had really been worked out before manual training was introduced into the high schools. The mechanic arts courses of the Massachusetts Institute of Technology, which were established in the year after the Centennial, had proven that shop work instruction could be carried on smoothly and evenly in connection with the regular class-room studies, and these courses were available as models at the foundation of the manual-training high school. To be sure the students were in one case from fifteen to eighteen years of age, and in the other case from eighteen to twenty-one, but the courses only needed to be modified in details, and were capable of being applied, on the whole, to the new conditions without much difficulty, and the extent to which these courses were so applied, and the extent to which the high schools have worked upon one line was shown very strikingly by the exhibits at Chicago two years ago. The exhibits of the high-school shop work shown there were strikingly uniform in character; the same general scheme had been used and, in general, the same methods and ideas of work had been applied.

MANUAL TRAINING IN ELEMENTARY SCHOOLS MUST BE ADAPTED TO THE AGE OF THE PUPILS.

But in the grammar-grade work no such example is at hand. The boy of twelve is a very different creature from the boy of fifteen, and the shop-work methods of the high school cannot be pulled down into the work of the grammar schools and produce efficient manual training. In fact, some of the most unfortunate experiments in manual training have been those in which the details and exercises fit for high-school boys have been brought down into the grammar grades.

This diversity—or rather this lack of any single scheme—was also shown at Chicago. The diversity of schemes of grammar-school work was as prominent as the uniformity of the high-school work. The exhibit at Chicago comprised an almost endless diversity of schemes of grammar-school work, slip work, knife work, sloyd, and various courses of joinery and constructive work, and the collection, as a whole, showed very strongly the experimental character of the manual training work in the grammar grades. It also showed what a large number of experimenters were engaged upon the problem and how energetically the subject was being developed.

As I studied exhibits at the fair, the greatest weakness of the work seemed to me to be in the fact that in the majority of cases too much was attempted; in the majority of cases the courses were ambitious to a degree. Constructive projects involving a considerable number of shop tools were attempted by pupils of grammar-school age that were manifestly beyond the capacities of the average boy in these grades; there had been too much pulling down in these cases from the work of the high school. The dangers from such attempts are of course very great.

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We are still very much in the experimental stage, and we shall be in the experimental stage for some years to come, as far as grammar-grade manual training goes. But it seems to me that the manual training course that is to be developed in the future and is to apply in a broad way to our educational conditions must embody these three principles—simplicity of methods, economy of equipment and of operation, and a content that shall be of interest to the pupil.

CHIP CARVING.

[By JOSEPHINE MAHAN, East Orange, N. J.]

During the past year this work has been taught with satisfactory results to some of the pupils of our highest grammar grade. Manual training in this grade has, so far, been entirely optional, and arranged to come in periods that would otherwise be given to study; that is, those who wished to take it could do so by forfeiting one study hour a week. These students have also been allowed to choose one of three forms of work—sewing, joinery or chip carving. Let me explain that manual training with us is only a year and a half old, and for reasons which seemed good, considerable freedom of choice has been allowed. Another year the carving will probably be done in a lower grade. Last September, of the ninety pupils in this class, eighty-three per cent chose the manual training work in some form. Of these sixty-four per cent took carving. An hour a week for a year may seem a long time to give to work as narrow in range as this necessarily is on account of the simple tools used; but when allowance is made for vacations and examinations, this means only a trifling thirty-five hours or so.

As a basis of the more artistic carving in relief, these thirty-five hours do not seem to be misspent. In the first place, the pupils like the work. While they are not old enough, and have not been trained to appreciate in detail the beauties of patterns resulting from flowing curves, they can admire the rhythmic arrangement of the geometrical forms that occur here, and this makes a good basis on which to

start the free work of advanced grades. This kind of carving depends for its effect, of course, on the repetition of a few simple elements. The pupils soon learn to make changes in these; and these new forms, when multiplied over a surface, produce such an original effect as to make an easy and pleasing beginning in designing. This work also offers excellent opportunities for the cultivation of taste and skill in arrangement. At first the pupils have trouble in merely copying a design, as they do not seem able to discriminate the fundamental shapes.

Such work as this requires correct seeing, good judgment and ability to make close comparisons. It gives good opportunities for studying the nature of wood, and it requires delicate and varied combinations of the muscles of the hand and arm. Its chief attraction consists in the neatness and accuracy with which the tool is handled, and, for this reason, ought to please those who would rigidly exclude from manual training everything that is not worked to a line.

THE COST OF A MANUAL TRAINING OUTFIT.

The following report on the cost of installing a manual training plant is of practical interest to all who may have occasion to consider the expediency of introducing courses of manual training in public or private schools.

In order to obtain reliable information as to the necessary expense to be incurred in first introducing these new methods, a circular letter, asking definite questions as to the cost per hundred pupils of the equipment for manual training, was sent by Mr. Jacques to city superintendents and supervisors of manual training. From the seventy or more replies received, the data was obtained from which this report was compiled.

RESULTS OF AN INVESTIGATION OF THE COST OF MANUAL TRAINING.

[By HUBERT R. JACQUES, Student, Teachers College.]

The copy of the circular letter of inquiry and the words of explanation with which the article opens are omitted. The following concise summaries and comments are given by Mr. Jacques:

The cost of manual training may be divided into two parts:

- (1) That of the original equipment, not including buildings, and
- (2) That for the yearly maintenance, including teacher's salary, supplies and repairs.

In Cleveland, Ohio, where joinery is taught to the pupils of the eighth grade, the equipment costs \$110 per hundred children. In Chicago an equipment of twelve double benches, each fitted with a full set of necessary tools, makes it possible to give one lesson a week in joinery to 360 boys of the seventh and eighth grades. The total cost of this equipment was \$600, or \$166 per hundred pupils. Supplies, repairs and teacher's salary require a yearly expenditure of \$1,200. Washington, D. C., also includes joinery as a subject in the seventh and eighth grades. While the cost is considerably more than at either Cleveland or Chicago—\$319 per hundred pupils—it would be reduced to about \$250 if the plant were worked to its fullest capacity. In one of the New Jersey towns where manual training has been introduced the outfit for the joinery room cost \$466. There are but seventy pupils in the seventh grade taking this work, so that the cost per hundred amounts to \$665. The fact must not be overlooked that this equipment can accommodate a much greater number of pupils. A town in Connecticut has spent about \$300 per hundred pupils in equipping for joinery in the eighth grammar and first high school grades. Here again the ratio could be reduced by keeping the work in continuous operation. In Salem, Mass., the boys of the sixth, the seventh and the eighth grades, in groups of twenty-five, spend a half day every two weeks in the joinery room. An expenditure of \$850 provides an equipment for 400 boys. Frankfort, Ky., has wood joinery in the sixth, the seventh and the eighth grammar and the three high school grades. Two hundred and forty boys are provided for at a cost of \$110 per hundred. Each boy has three lessons per week. The figures thus far presented show a variation from \$110 to \$665 per hundred pupils for equipments to carry on joinery work in the grammar school.

The many apparent discrepancies which, at first sight, appear in the foregoing figures, disappear upon closer examination. For example, if the equipment in the New Jersey town referred to were used by three times as many pupils as at present,

the cost per hundred would be about \$155. In one or two instances the expenditures, when the equipment is used to its fullest capacity, are shown to be more than \$200. In the majority of the cases cited, the cost would range from \$110 to about \$170 per hundred pupils, if the equipment were used the greater part of the time during the school day. The main cause, therefore, for these wide variations seems to be the failure to use to the best advantage the facilities at hand.

Mr. Leavitt, of Boston, sends the following estimate for a joinery equipment:

30 benches.....	\$300
30 sets of tools.....	300
Extra tools, cases, incidentals.....	200
Total	\$800

Allowing for irregularities which are bound to occur, Mr. Leavitt selects 25 as the average number of children in a class. Ten classes per week would then include 250 pupils, and the equipment would cost \$320 per hundred. By reducing the time so that each boy spends $1\frac{1}{2}$ hours per week at the bench, this equipment would accommodate 375 pupils at a cost of \$213 per hundred. These figures may be regarded as the maximum necessary cost of an equipment required for joinery as taught in the public grammar school. A joinery equipment similar in character to that of Teachers College could be obtained at about the following cost:

Bench.....	\$10.00
Tools	5.00
Total	\$15.00 per bench.
20 benches.....	\$300
Special tools	40
Cases or lockers.....	125
Total	\$465

While this does not provide for quite as many tools as there are in the outfit above mentioned, it still leaves an equipment with which first class work can be done. Cases less elaborate than those at the Teachers College would meet the requirements satisfactorily. If we arrange for one lesson of an hour and three-quarters per week for each pupil, this equipment will accommodate 300 children at a cost of \$155 per hundred. Should the time be limited to one hour per week, as in some of the places already named, the cost per hundred pupils could be reduced to about \$100. With ordinary usage five per cent per annum of the original cost ought to provide for repairs. The annual outlay for supplies, such as lumber and hardware, will depend to a great extent upon the teacher and the character of the models. With small models and careful supervision, \$40 per hundred pupils may be sufficient, while large models and an incompetent teacher might easily require three times that amount for supplies and repairs for a year. Mr. Leavitt's figures show \$64 per hundred pupils to be sufficient to provide for all expenses during the year except the salary of the teacher, which is placed at \$900. At Salem, Mass., where 120 boys are provided for, the teacher's salary, together with the cost of repairs and supplies, amounts to \$1,200. Chicago spends the same amount in providing for 360 boys.

The teacher's salary ranges from \$600 to \$1,200 depending on the locality and the teacher's competency. A knowledge of methods and ability to organize do away with much costly experimenting. A teacher at \$1,200 who is a conservative manager and under whose guidance the child's character is strengthened and broadened is cheaper than a less competent one at \$600. A trained teacher will often save to the city more than the extra amount of his salary. In too many cases the effort is to see either how much or how little money may be spent for manual training. The welfare of the children should never be outweighed by a few hundred dollars.

Elementary work in wood has been introduced in a number of forms under such names as sloyd, knife work, chip carving, slip work or work in thin wood. In one of the smaller cities of Illinois knife work has been introduced into the 7th grade at a cost of \$75 per hundred pupils. The cost of the equipment at Cleveland, where similar work is carried on in the 5th, the 6th and the 7th grades, was \$40 per hundred pupils. Springfield, Mass., spent \$125 per hundred pupils in equipping for this kind of work. At Cleveland the regular class teacher gives the instruction, under the direction of a supervisor, while at the other two places special teachers are employed.

At Montclair, N. J., work in thin wood is taught by the regular class teacher to the pupils of the 5th grade. The equipment costs \$50 per hundred children. Mr. L. E. Ackerman of Atlantic City, N. J., makes a carefully prepared statement in which he shows that a tray with a cutting block, knife, rule, triangle and compasses could be provided for \$1.45. Mr. Ackerman suggests that in a school having

a total of 200 pupils in the five upper grades, each pupil be provided with an individual outfit to be kept in a specially provided case in the regular class room. Allowing \$50.00 for cases this would require an expenditure of \$170 per hundred pupils. If the usual plan were adopted, an equipment of thirty such outfits, placed in a separate room fitted with ordinary single desks, the cost, including that of the necessary case but excluding that for the desks, would be about \$50.00 per hundred pupils. With a proper arrangement of the various class programs each pupil might then devote two hours per week to this work. From \$25 to \$30 would furnish material for one year's work.

An equipment which would serve for slip or knife work, chip carving or very elementary sloyd could be provided at about the following cost. 24 complete sets of tools and the necessary case for storing them when not in use about \$100. Allowing \$125 for closet room, a case for storing stock and unfinished work, the outfit would cost about \$225. If, during the week, each group or class were to take two lessons of an hour's duration, 240 children would then be provided for. Thus an equipment sufficiently complete to carry this line of work from the fourth to the eighth grade inclusive can be provided at a cost of about \$90 or \$95 per hundred pupils. As in joinery, the cost of maintenance will depend on the models and class management. For ordinary work from \$20 to \$30 per hundred pupils will provide for necessary supplies and repairs.

Clay modeling has been introduced into the schools of one of the large towns near New York City at a cost of \$100 per hundred pupils. In several systems of schools, modeling, paper folding, cardboard cutting and color work are combined as one item of expense under the general heading "Manual Training." The equipment for this kind of work in the first four grades of the Cleveland schools cost \$1.50 per hundred children. The equipment for the schools at Washington, D. C., where the instruction is carried through the eight grades, cost \$3.75 per hundred pupils.

A piece of oiled cloth, a common slate, a spool or two of stout thread provides a clay modeling equipment which may be utilized in any of the grades of the elementary schools. Allowing each pupil to devote two hours per week to this kind of work, 60 such outfits, passed from room to room will provide for a maximum of 750 children at a cost of about \$2.00 per hundred. Adding to this an allowance of \$2.00 for models, stone jars and incidentals the equipment will not cost over \$4.00 per hundred pupils. The average teacher can, in a comparatively short time, gain sufficient knowledge of the subject to teach it to the children. From \$2.00 to \$4.00 will provide clay for one hundred pupils for one year.

It has been seen that joinery has been successfully introduced at a cost of \$110.00 per hundred pupils, and that with one hour per week for each child even this figure might be slightly reduced. If the lesson were lengthened to an hour and three quarters the equipment, unless affected by unusual local influences, could be provided for about \$150.00 or \$160.00 per hundred pupils. Under careful supervision, from \$40.00 to \$60.00 per hundred pupils will be ample for a year's supply of material. An equipment sufficiently complete to carry on elementary woodworking can be secured for about \$90.00 per hundred pupils. \$4.00 for equipment and from \$4.00 to \$5.00 per hundred pupils for yearly maintenance is a liberal estimate for clay modeling. Cardboard cutting and paper folding will cost but little if any more than clay modeling. Where a special room is desired for any of these elementary forms of manual training, the cost of providing the necessary desks must be added. The original intention was to arrange these figures according to grades, but the differences were so slight that it was found impractical. Special teachers are recommended in the majority of cases. Where the regular teacher gives the instruction the work is usually under the direction of a supervisor.

In conclusion: The more thorough and extended one's study, the more apparent becomes the fact that defective supervision and poor teaching are responsible for a majority of the shortcomings of manual training; they are the reasons why the results of manual training often fail to justify the expenditures made. A failure to so place a given equipment that the greatest number of pupils may use it to advantage, often necessitates a double outlay and brings upon manual training adverse and unfair criticism. And, finally the advocate of manual training still has work to do in making clear the fact that manual training is character-building and not merely a means of developing manual dexterity.

After the reading of the above report the chairman, Professor Bennett, in closing the conference, said:

This conference has brought me into communication with many teachers of manual training. The hearty sympathy and coöperation of every one has been most encouraging. It seems to indicate that manual training teachers are beginning, at least, to appreciate how large a subject they are dealing with, and to realize how

little they know about it. They are looking for more light; they are "hungry," as one correspondent expressed it, "for more information;" they are seeking for the truth. To me this is a most encouraging sign for the future of manual training in America.

ANNOUNCEMENT.

The Second Annual Manual Training Conference and Exhibition, under the auspices of Teachers College, will be held on Saturday, May 16, 1896. The subject of the conference will be "The Relation of Manual Training and Art Education." The exhibit will be selected with reference to encouraging the introduction of more beautiful models into courses of instruction in manual training.

This conference was held as announced, and several papers of interest were read. I regret that no report of the proceedings has been received in time for fuller reference in this Appendix.

The last ten pages of the Bulletin are given to a catalogue of the exhibition of manual training school work, which was shown in connection with the conference of 1895. There are ten photographic illustrations of the exhibits shown.

The work shown is mostly that of the five higher grades of the public schools. Exhibits are shown by the public schools of cities and towns in Massachusetts, Connecticut, New York, New Jersey, Minnesota, Colorado, and, also, by the Teachers College, and the Hebrew Institute, New York City, and the Pratt Institute, Brooklyn, N. Y.

The opening of a Summer School of Manual Training to be held in the Macy Manual Arts Building in July and August, 1896, was also announced in the Bulletin.

(f) STATISTICS OF MANUAL AND INDUSTRIAL TRAINING IN CITY PUBLIC SCHOOLS AND OTHER INSTITUTIONS IN THE UNITED STATES.*

In the Annual Report, of the U. S. Commissioner of Education, for 1893-94, (just being issued to the public in October, 1896), those interested in the development of manual and industrial training, will find some very interesting statistics relating to these branches of education, as they at present are taught in the public schools of cities and towns, and in other educational and charitable institutions in the United States.

These tables, which give by far the fullest and most complete statistics of manual training which have yet been issued, were collected and compiled with great care, by Mr. J. C. Boykin, of the U. S. Bureau of Education.

I should have been glad to have had these valuable tables in this volume of the Art and Industry Report but as this is not possible I take pleasure in calling attention to them. Twenty pages of the tables are given to very full details of the manual training instruction in the public schools of ninety-five cities and towns. These are followed by similar statistics in forty-nine institutions of collegiate grade; in nineteen normal schools; and in seventeen manual training schools.

There are, also, industrial statistics of sixty-three schools for the colored race; also in fifty-five schools for the deaf; in twenty-six schools for the blind; in nineteen schools for the feeble minded; in fifty-three reform schools and reformatories; in eighteen charity schools; in six trade schools; and in twenty-seven United States Indian schools.

*See Report of U. S. Commissioner of Education 1893-94. Volume 2, pages 2093-2099.

XII.

AN INTERESTING PICTURE OF EUROPEAN INDUSTRIAL ART SCHOOLS, ANNO DOMINI 1896.

As, owing to circumstances and delays sufficiently explained elsewhere in this Report, much of the material in the present volume is necessarily of historical rather than of contemporary interest; I am the more pleased with the opportunity of giving in the following recent paper, an account of the Industrial Art Schools of Europe as they appeared to one of the best equipped and most competent of American educational observers, during the spring and summer of the year 1896.

Mr. Leslie W. Miller, the accomplished principal of the School of Industrial Art of the Pennsylvania Museum, was one of the first pupils in Boston of that great art master, the late Walter Smith; and has been himself actively engaged in teaching ever since his graduation from the Massachusetts State Normal Art School, under Professor Smith, in the early seventies. He has been in charge of the Pennsylvania School from its first small beginnings; and has seen it grow,—thanks largely to his own indefatigable energy and his recognized abilities as an Instructor,—to the important institution which now ranks in the foremost class of American Institutions for Technical Industrial Art Training.

The comprehensive general view embodied in the following paper,—which appeared in the Sunday Edition of the Philadelphia Times, September 6th, 1896,—is a popular, rather than a statistical, account of some of the English and Continental Schools of Industrial Art. It is, in this respect, in striking contrast with the detailed account of some of the Continental schools of this class, as given in a report some years ago, by Mr. Charles M. Carter, when connected with the Massachusetts State Normal Art School; since, in Mr. Carter's paper, the courses of study and methods of instruction in the several schools, are set forth at length.* The two accounts are, in a measure, complementary to each other; and it may be of interest to study them in connection.

The following were the comments of the "Times" in introducing Mr. Miller's paper.

INDUSTRIAL ART ABROAD.

LESLIE W. MILLER WRITES FOR THE TIMES OF HIS VISIT TO THE MOST PROMINENT SCHOOLS OF ENGLAND, FRANCE AND GERMANY.

To few of the many who sought foreign shores this summer, have the observations of European travel been of greater personal value and, by reason of the purpose of his visit and the important position he occupies, likely to result in benefit to a large part of the community, than they have been to Leslie W. Miller, principal of the School of Industrial Art of the Pennsylvania Museum. Mr. Miller's

* See Mr. Carter's paper in Appendix "H," pages 799-820, of the present volume.

visit was made in the interests of this institution to study the methods and practice of the industrial art schools of England, France and Germany and to ascertain through personal examination what ideas we could import with profit for the still further improvement of the Industrial Art School.

Mr. Miller sailed on May 27, so that he was able to visit many of the schools during their seasons of greatest activity, and to see a large number of important exhibitions representing the best work of the year. The first month he spent in the English schools, which in many respects, especially in what Mr. Miller calls their general utility, their very practical aims and the helpful influence they are endeavoring to exert on the life of the people and the quality of their productions, are more like the American schools. The English point of view is more nearly our own. In London he visited a large number of typical schools, not only those that have been organized and developed under the science and art department, a department of the government, but the schools in and around the English capital which are owned and managed by the various guilds, the like of which we have nothing in America and which have survived from mediaeval times. He also saw the schools of Leeds, Bradford, Birmingham and Manchester, besides smaller schools which flourish in less well known districts.

In all art matters, including industrial education, we are inclined to attach an immense amount of importance to the French example. What Mr. Miller has to say on this point, as a result of his observations in the French schools, notably those of Paris, the School of Decorative Art at Limoges, the Textile School at Lyons and the schools of Toulouse, Amiens and Rheims, among others, furnishes some of the most interesting paragraphs of the very valuable article he has written for *The Times*, and which is printed to-day.

The important matter which confronts the German schools, as it does the English and as it does the schools of America, such as our own Industrial Art School, is the relation between art training and the mechanical methods. Mr. Miller visited the schools, and wherever they were held, the expositions of Berlin, Vienna, Munich, Nuremberg, and, later on, Lucerne, Zurich and Geneva. These included a number of trade schools, where technical instruction is given in such crafts as are individual to the community in which the school is established. Mr. Miller's paper will command the consideration of all who are interested in a most important and timely subject, with which Philadelphia, not only as an art centre, but as a commercial city, is deeply concerned.

MR. MILLER'S PAPER.

(a) THE RESULT OF SEVERAL WEEKS' OBSERVATION OF THE INDUSTRIAL ART SCHOOLS OF ENGLAND, FRANCE AND GERMANY IN 1896.

Without claiming for this account of the methods of some of the more prominent European schools that it either aims or deserves to be regarded as in any way exhaustive of the subject of which it treats, I have ventured to prepare it in the hope that, as the record of some fresh impressions received this summer, it may, in its modest way, prove helpful as a contribution to what is perhaps the most conspicuous if not the most important phase of current educational discussion.

It is important at the outset to remember that the whole question of how to make industrial education effective is quite as eagerly debated in Europe as it is with us and although the discussion has been going on longer, and the schools are older over there, yet they are not so very much older, nor are the questions involved in the discussion much nearer a solution than they are in America; while as regards the results so far obtained, it will have to be admitted that the best American schools are in their way quite as good, if not better, than any in Europe with which it would be at all fair to compare them.

LIBERAL SUPPORT GIVEN BY THE GOVERNMENT TO EUROPEAN ART AND TECHNICAL SCHOOLS.

In one respect, however, we have an important lesson to learn from our relatives across the sea. In any one of those great countries to whose schools these imperfect notes mainly have reference, the importance of industrial art education as a factor in the strength of the state itself is recognized so fully and unhesitatingly that the energy which we are obliged to spend in urging and advocating the matter, with those who make our laws and whose acts determine the character of our national life, is mostly saved. No public institution in Germany, for example, not the military establishment itself, is more sure of permanent and ample support

than are the schools of art and industry which flourish not in a few great cities alone, as with us, but in almost every town of any importance in the land. Of France very much the same is true, although the instruction is based on a somewhat different principle, while in England the expenditures of the science and art department, which have always been on a scale so lavish as to make American educators green with envy, are at present supplemented annually by the nearly four million dollars of funds derived from the tax on beer, for which the Parliament can think of no more popular or patriotic use than to distribute it in grants among the different cities of the kingdom to assist in the promotion of those forms of technical instruction in which each community is most directly interested.

Of this very large sum a considerable portion is undoubtedly devoted to the establishment of new technological schools, some of which are probably only indirectly related to either art or industry, but a good deal of the money goes to swell the amount which the government has for the last forty years been accustomed to disburse through the science and art department, either in the form of direct grants to the different schools or of recompenses for meritorious work, this last being the form in which a large part of the government support is administered. This system of recompenses is so characteristic of the English mind and forms so striking a feature of the system of instruction to which the government seems to be so unequivocally committed that it deserves a few words of description. Nothing like it exists, as far as I know, in any other country, and yet the pernicious results which everywhere attend it and with which the most superficial student of the system cannot fail to be impressed, do not seem to have shaken, in the least degree, the faith of the authorities in whose control the whole matter remains.

WEAKNESS OF ENGLISH SYSTEM OF AWARDS INDICATED.

Briefly stated the scheme is this: The works of students, even in the most elementary schools, are regarded, not as exercises, but as results. The little drawings of simple forms, and the rudimentary combinations of lines and colors which do duty as "designs" in drawing schools all over the world, are treated in England as ends attained, and are rewarded by grants of money from the public purse. It would be hard to conceive of anything more trivial in itself or more demoralizing to the student, because such a view of his work as this practice indicates, means a continual misapprehension of the spirit in which a pupil ought to work, and the habit of "babying" his drawing as something valuable and interesting in itself, instead of making it a means of acquiring and recording information and quickened perception on his own part, leads, and can possibly lead, to but one result. A rather high level of respectable mediocrity is reached in a vast number of schools, but the pupil of real talent, whose abilities it would seem to be the highest aim of such a system to develop and utilize, is invariably repelled or repressed. This result is perfectly apparent throughout the system and it is apparently unavoidable under present conditions. So true is this and so well is it understood by the authorities themselves that it is continually referred to as an evidence of the efficiency of the methods pursued; such results as are obtained being pointed to rather proudly as something which in no way indicates any marked talent or ability on the part of the student, but as the product of the "system" pure and simple.

Obvious as are the limitations of this method of procedure, it is not to be denied that it seems to be well adapted to the English mind and to fit in very well with other institutions to which the English people have long been accustomed and which, on the whole, they seem rather cordially to approve. They have immense respect for institutions as such and like to see them organically complete. The satisfaction which they take in contemplating, and, for that matter, in supporting, a good many things that are characteristically British is something which, if not quite apart from any recognition of their utility, is at least based rather on completeness of the organization itself than on any high qualities in the individual official which their administration is likely to either command or develop.

MARKED INSTITUTIONAL CHARACTERISTICS OF THE ENGLISH PEOPLE.

The national scheme of industrial art education is just one of many such institutions, of which plenty of other examples will readily suggest themselves to any one at all familiar with the English temperament. Programmes and courses are prescribed with great definiteness, and all schools, wherever located, that expect to receive assistance from the government are expected to observe them. Moreover, the Central School, at South Kensington, in London, is mainly, if not solely, regarded as a training school for teachers, so that a body of instructors, admirably qualified to conduct the schools in strict accordance with the requirements of the system, is

always available. Then not only the works executed annually as examination tests, but an enormous amount of the regular exercises, of which the routine work of the classes consists, is sent to London to be inspected and judged by a body of experts and artists, who are not connected with the schools in any other way. In accordance with the decisions of this jury a considerable number of medals and other prizes are awarded, and the recompenses to the different schools, which were spoken of in a preceding paragraph, are determined. Each exercise of the prescribed course has its price, and money is paid to schools no matter where they are located or by whom they are conducted, in proportion to the number of these exercises, which are sent up for examination, and are done well enough to be "passed" by the inspectors.

The examination of these works is made during the summer vacation, and while a good deal of the work of inspection is now done at the schools themselves, so that the number of works sent to London is considerably smaller than it used to be, it is still enormous, and the conscientious examination and classification of all this mass of students' work is a task of no small dimensions. No less than 88,854 of these studies were examined this year. They were sent up from 1,064 schools and were judged by a board of twenty-four examiners—men of the highest ability and reputation, and not connected in any other way with the schools whose work it is their duty to inspect.

THE REPRESSION RATHER THAN ENCOURAGEMENT OF ORIGINAL GENIUS DUE TO THE SYSTEM.

As already noted, there is the objection to all this that it rather sets a premium on plodding, and undoubtedly tends to keep down standards, which one cannot help thinking it ought to be the first business of such establishments to exalt. In this respect the English schools certainly contrast unfavorably with those of France, although it will at the same time have to be admitted that in what may be called their general utility, their very practical aims and the great number of those which are reached and helped by them, the English schools accomplish vastly more and perform a much more valuable service in promoting the culture of the people than do those of their neighbors across the channel.

PRASEWORTHY FEATURES.

For what has just been said about the limitations of the English schools is the worst that can be said of them. Judged on many other grounds their work is admirable. They do really carry even into the most remote hamlets something of the help and opportunity for culture and refinement which art represents; they do really exert on the life of the people and on the quality of their productions a beneficent and helpful influence, the importance of which it would be hard to measure and next to impossible to overrate.

In the first place the very fact of the existence of this great system of schools, fairly well furnished with casts and collections of objects of art and occupying almost always good buildings of considerable architectural importance in the heart of every city and town, is, in itself, a recognition of a principle which carries tremendous significance and acts as the most powerful kind of a reminder of the aims which constitute the true greatness of communities.

Then the work that is done in the schools, whatever criticism it may be open to on grounds which have already been touched upon, is certainly admirable in many ways. For one thing, it conserves and develops a distinctly national style in decorative design, and this is something that is all the time growing, and in which unmistakable progress is to be observed.

RETROSPECTIVE EXHIBITION OF THE SCHOOL ART WORK FOR TEN YEARS.

There was made in London this summer not only the usual exhibition of representative works from all the best schools in the kingdom, but a retrospective exhibition as well, in which were included all the works which had received national medals during the last ten years. The comparison that was thus invited was, on the whole, decidedly favorable to the more recent work and the improvement was especially noticeable in everything relating to practical, decorative design. The purpose by which the different schools are evidently dominated is to impress upon the industries of the country an increasingly higher artistic character and to cultivate among their pupils the inclination to express, through the processes of modern manufacture, the best ideas they have.

ENGLISH, FRENCH, AND GERMAN SYSTEMS CONCISELY CONTRASTED.

Taken together and subject to the criticism already made that hardly anything produced reaches a plane of very exceptional excellence—the working of the system tending naturally rather to repress than to develop the qualities which distinguish individual genius—the work in applied design of these English schools is certainly very good, much better, if quantity and variety are allowed to count, than that of either the French or German schools.

Toward the solution of the problem of bridging the chasm between all this artistic endeavor and the mechanical methods of modern industrial production, the English schools have not contributed very much. As will be shown later on, the German schools try to solve it—indeed, they very largely do solve it, by associating instruction in the trades themselves with training in art.

In France they do not believe very much in this way of working, or sympathize very much with the aim which it represents; and, except in a few not very representative schools, they hardly make the attempt to combine these motives in educational work. With the French, instruction in a trade is one thing and training in art is quite another, and they have done almost nothing in the direction of providing instruction in industrial art. It is quite possible that the high state of development which the trades have attained in France justifies this disregard of what is felt to be the really important matter in England and Germany, as well as in America. It is only because the industrial aim is kept prominent and the association with industry continually emphasized that art education receives the support that it does in England, and the recent enormous increase in the sums disbursed by the government for technical education shows very plainly that it is on the side of its practical application that the higher education, in art or in anything else, makes its strongest, if not its only appeal to public interest.

The appropriation for technical education by the English Parliament of the revenue derived from the tax on beer, which has already been cited, furnishes probably the most striking illustration that could be named of the extent to which the subject has taken hold of the popular imagination. In any preceding age the receipts from this tax, which Parliament had the good sense to decline to abolish at the bidding of the prohibitionists, but which, in deference to the sentiment which they represented, it felt compelled to set apart for some special good work, would have been devoted to the support of hospitals, almshouses or something of that sort; that it is now devoted to this very practical educational work shows very conclusively how popular the movement for industrial education is.

THE FRENCH EXAMPLE.

But in France they do not seem to feel the same way about it, and probably they do not feel the same need of educating their workmen that other countries do, for the very good reason that they do not need it to anything like the same extent. At any rate, they undoubtedly rely much more on the effect of cultivating the fine arts, as such, and of teaching the trades, where they teach them at all, simply as trades and much less on the effort to associate the two than they do in either England or Germany.

THE FEW TRADE SCHOOLS IN FRANCE.

It is true that there are several trade schools in France, schools of weaving, of watch-making, of furniture, of book-making, including engraving, printing, binding and all sorts of related branches; of carpentry and of metal work, but there is much less of this kind of instruction there than in Germany, and the attempt to correlate the technical with the artistic training is much less apparent. The textile school at Lyons may be taken as a fair illustration of this.

It is one of the best-known and oftenest mentioned technical schools in France, and it is as favorably placed as it would seem to be possible for such a school to be. Lyons is not only the center of the silk industry in France, but the factory system is practically unknown, the work being done almost without exception in the homes of the people. This means that the utmost variety is given to the work and that the workman, as distinguished from the equipment of a mill, assumes an importance that is unthought of in a factory town. The conditions, then, that are always regarded as most favorable to a higher class technical school are those that exist at Lyons, but the textile school is something of a disappointment to one who has seen those of either England or Germany. It is a weaving school pure and simple, and does not attempt to provide instruction either in design, as we understand the term, or in the scientific branches whose relation to the textile industry is most apparent, such as chemistry and mechanics. It is Merle's school, then, that such provision as is

made in France for systematic instruction in the trades has strict reference to replacing the apprenticeship system rather than to supplementing it, which is the aim that other people, including ourselves, have always kept in view.

PREDOMINANT INFLUENCE OF THE FINE ARTS IN FRANCE.

On the other hand, the reliance of the French on the cultivation of the fine arts as a refining influence which is sure to make itself felt in the industries whether the schools make any very direct efforts to apply it or not, is not to be overlooked. All the world knows how ample is the provision which is made in France for instructing in the fine arts and how large a part they play in all public work, and with the trades in a highly developed condition as they are in that country there is undoubtedly some reason for the different feeling with which instruction in applied art is regarded as compared with the opinion which seems to prevail in both England and Germany.

ARTISAN EVENING SCHOOLS IN FRANCE.

There are no less than 65 free evening art schools in Paris alone which are intended for, and are largely attended by, the artisan class. They are liberally supported by the city government and well supplied with models and casts, as, indeed, all French schools are, the most generous provision of everything of this kind being always made by both the national and municipal governments, one of the assurances that is given the visitor most proudly and most confidently being that no request from even the most remote provincial school for equipment of this kind is ever refused. The 4,000 artisans who regularly attend these free art schools of Paris, which are open every week-day evening and every Sunday morning from 9 to 12, represent the real strength of French industry, and without the influence which these schools exert it is inconceivable that France could long retain the industrial leadership which she now enjoys.

But in no other city in the world would it be possible to find 4,000 workmen ready and eager to profit by such opportunities for the study of art as these schools supply. These men demand and receive not technical instruction of any kind, not even much, if any, attention is paid to decorative design; it is drawing and modeling as understood by the artist, that they are after; and to these studies they devote themselves.

SCHOOLS OF APPLIED ART IN FRANCE.

The best, and, indeed, about the only important school of applied or industrial art in Paris is the National School of Decorative Art (*Ecole Nationale des Arts Decoratifs*).

This school as its name implies pays a great deal of attention to design, and, although the regular work of its 1,100 pupils is mainly drawing and modeling from the cast or the living model, the thing which is most distinctive in its course is the work in original design.

It offers, among several others, a very admirable course in the "History and Composition of Ornament," and the work which is done in the monthly *concours* of the class and in the annual competition which takes place at the end of each school year constitutes the main feature of interest in the work of the school.

But even in these designs very little attention is paid to any particular form of application; very little concession is made, or thought given, to those practical requirements, without consideration for which no designer's work stands much chance of ever being carried out. They are original compositions on given themes; illustrations of ideas indicated by the master, that is all. Sometimes the human figure is introduced, but they often consist of pure ornament. The best of the designs submitted in these competitions are undoubtedly rather more artistic, rather freer and more masterly in treatment, than anything that is often seen in either the English or the German schools.

A great deal of attention is paid to modeling and some very admirable work was shown this year in this department, including original designs for architectural ornaments, fountains, memorial structures, tablets, etc. As in all schools of this kind in France the instruction is absolutely free and the expense of maintaining it, which amounts to rather more than \$21,000 a year, is borne partly by the nation and partly by the city of Paris. In addition to the school described above there is one for girls in another part of the city, in which the study of plants, flowers and other natural forms, accompanied by an analysis and application of their decorative qualities, seemed to me about the best work of this kind that I saw produced in any school in Europe.

There is another School of Decorative Art at Limoges, which was established, or at least reorganized, a few years ago under the same very able director—M. Lajolais—who has charge of the school in Paris. The school is characterized by a rather more distinct, or at least more special industrial purpose than the one at Paris, as it is conducted with direct reference to the ceramic manufactures for which Limoges has long been famous. The students not only work out very completely on paper their designs for the decoration of pottery and porcelain, and make most admirable studies from nature with reference to this kind of application, but they decorate the china itself and etch the plates used in the production of printed decoration. In this school also a great deal of attention is paid to modeling, which is studied from the point of view of the designer of ceramic forms. Schools with a somewhat similar purpose, but with hardly so highly specialized an aim, exist also at Lyons, Toulouse, Roubaix, Amiens, Rheims, Lille and a good many other places, nearly every provincial town in France having at least one, but in them all it is art that forms the basis of instruction, not technical work of any kind.

THE GERMAN EXAMPLE.

All this is different in Germany. The aim of the German schools is intensely practical, and generous as is the provision for instruction in the fine arts, their association with industrial education is strenuously insisted on everywhere, the pupils being trained in the technical processes of the trades as carefully as they are taught to appreciate the aims of the artist. Throughout Germany and Austria, too (indeed, the initiative of this now well-nigh universal effort among German-speaking peoples to give technical training a prominent place in education was probably taken by Austria), classes in all sorts of trade processes are in operation, either in separate schools (*Fachschulen*), which are very common in the smaller towns, or as departments of the schools of industrial art in the cities. A list of these schools would include a list of the trades themselves—hardly less than that; joinery, masonry and the building trades generally, clock-making and carving as applied to clock cases; jewelry and goldsmith work; metal work, including wrought iron and the casting and chasing of bronze; pottery, violin-making, watch-making, weaving, etc. Nothing can be more interesting to the student, not only of educational affairs as such, but of the causes which underlie that modern industrial competition which is fast assuming the character of warfare, than these German trade schools; which are organized and carried on in obedience to the same instinct for mutual protection, which makes the strength of all governments, and underlies all social order. These German schools are usually subsidized by both the national and local governments, but they are usually controlled exclusively by the local guilds or societies of masters in the crafts represented. That all apprentices should also attend these schools during certain hours during the week seems to be the rule, and is often compulsory, his master not only allowing him to do so but being responsible for his attendance and the small fee that he is required to pay.

CONTRAST BETWEEN INDUSTRIAL EDUCATIONAL IDEALS IN GERMANY AND IN AMERICA.

That masters and employes have reached a stage of development where they are willing to make it a part of their duty to provide systematic instruction in their trades by means of schools which are open to the apprentices of their rivals in business as well as to their own shows how much better than their brethren in America they have learned the importance of making common cause against a common enemy. In America we are still to a considerable extent in a state which, in this respect, is representative, not of social order, but of savagery; that is to say, it is so far from being the rule that our employers are willing to interest themselves in making general the education which would tend to improve the quality of their productions, that the contrary statement would probably be more nearly true.

Too many of them would rather fear than welcome the effect of this education, which simply means that they would prefer to hunt by themselves in a wilderness rather than make those concessions, and render that service, to the common safety and welfare, on which civilization depends. This is the most pressing lesson which American industry has to learn, and Germany is the country in which to study it.

SYSTEMATIC TECHNICAL INSTRUCTION A CHARACTERISTIC OF GERMAN SCHOOLS.

This principle, then, of relying on systematic instruction in the trades underlies all that is most characteristic in the German schools, not only those of the lower grades for apprentices, but the higher professional schools as well. Of these institutions the highest types are the Schools of Industrial Art (*Kunst Gewerbe*

Schulen) of Berlin, Vienna, Nuremberg and Munich, with which the admirable schools of Lucerne, Zurich and Geneva, in Switzerland, are quite worthy of being classed.

In all these schools the students learn not only to draw and design for the more artistic crafts, but work at the crafts themselves. At the Munich School, for example, in addition to the usual exercises in which the visitor to an art school is accustomed to find the pupils engaged, one sees the students doing really exquisite work in wall and ceiling decoration, wood carving, glass painting, metal work, scroll work, repousse, bronze casting and chasing, lithography, wood engraving and etching, and the decoration of pottery and porcelain. Very good and practical work is also done in the designing of wall papers, etc., as well as of carpets and other high class textiles. There is no textile school in Munich in which the connection between the design and the processes of manufacture can be studied as it is in several English schools, and as it is in the School of Industrial Art at Philadelphia. But the technical requirements of this kind receive more attention there than in most European schools, where the actual weaving is not taught. The designs are made on the squared paper to which all sketches must be adapted before they can be carried out, and to a certain extent the pupils supplement the instruction received here by attending the weaving schools in the neighboring towns of Munchberg and Passau.

While the Munich School is one of the very best, it is not exceptional, among German schools, in the methods which its courses illustrate. It occupies a fine building in a central location, close by the great art galleries that are the pride of Munich, and its equipment is very complete in every respect, but the best thing about it is that it does not represent the ideas of a few devoted and enthusiastic persons preaching in the wilderness, but the convictions of a great nation. The school is not exceptional, but typical in the fullest sense. What Munich has in such perfection many other German cities have in a greater or less degree of completeness. The same methods characterize the conduct of the schools in all the cities mentioned above, and, in proportion to the perfection of their organization, a great many smaller, or, at least, less well-known schools in other places. As is the rule in Germany, all students pay a fee, which partly covers the expense of maintenance. It will be seen that all this offers a decided contrast to the spirit in which the schools are conducted in France, where they teach as much art as they can and trust to its finding its industrial applications itself. The question as to which example is likely to prove of most value to Americans is a very important one. If all this provision for technical instruction is of really high utility we want to know it. If, on the other hand, the art instruction alone is all that is needed or is perhaps better than the other, even if regarded from the industrial standpoint, we certainly want to know that, too. The subject is one which has been carefully canvassed in England within the last few years. The continental schools have been very carefully studied by a board of able commissioners, whose reports fill several large volumes and whose opinions seem to have had a great deal of influence in shaping the educational policy of England. The testimony of the commission is very pronounced in its approval of the German methods and, as has already been shown, the most important steps that have been taken in England have been in the direction of profiting by the German example. They have profited by the example of the French art schools, too, and their work, as shown in the retrospective exhibitions this last summer, is undoubtedly improving all the time, even if studied with references to art instruction alone, but the most noticeable improvement has been made on the side of practical design.

RECAPITULATION.

To sum up, the French schools emphasize the art idea and pay comparatively little attention to technical processes or to technical limitations in the teaching of design. Instruction in them is free, and original design is stimulated by the offer of a system of prizes, the most characteristic work of the schools being done in competition for these prizes. The study of nature, whether of flowers, etc., or of the human figure, as pursued in these schools is admirable, the methods of drawing simple and direct, the time spent on each drawing or design is recorded and the pupil is not allowed to waste his time over them. The schools, which are entirely free, are regarded as of the highest public utility, and although usually established by private initiative are supported by liberal appropriations from both State and city governments.

The German schools emphasize the industrial idea, and pay great attention to technical instruction. A moderate fee is usually paid, but bursaries and free scholarships are provided for needy students. The competitions in original design so characteristic of French schools do not seem to be relied on to anything like the same

extent in Germany. This appears to be one of the weakest features in the German system of instruction, as the lack of originality is apparent everywhere. The work of German pupils, while it is always accurate and painstaking, is apt to be barely more than copying. The courses of instruction, especially in the technique of the different crafts, seem to consist very largely of copying the work of the old masters of these crafts. It is natural enough that this should be so, and one feels that there is a certain amount of reasonableness in it when one is on the ground. The charm and glory of almost any one of the old towns consist very largely of the memory and influence of the great Masters of Art. Nobody, for example, who has felt the charm of Nuremberg, can separate the pleasure which it gives him from his admiration for Albrecht Durer, and Peter Vischer, and it is hard to see how the Nurembergers could do otherwise than set their children to studying the works which give to their town a large part of its fame. But, all the same, this practice puts a damper on originality and makes it virtually impossible for new ideas to have influence. The American visitor is amazed to see how patiently a German pupil will labor to copy, line for line, a work by an old master, a task at which the American student would revolt at once. This kind of practice probably develops a high degree of skill of a certain kind, but it certainly does not tend to the infusion of new ideas. It is probable, however, that while it is in no way suited to the needs of our schools, it is on the whole very well adapted to those of Germany.

THE ENGLISH PLAN CRITICISED.

The English schools are endeavoring to unite the practical methods of Germany with the artistic spirit which rules in France and to a considerable extent they are succeeding. Reference has been made to the improvement noticed in the artistic quality of the work exhibited this year, as well as to the more practical character of the designs; that this improvement, especially in the first of these two cases, is not still more marked is apparently due to the false standards by which the students' work is judged and official support apportioned.

In the official courses which all the schools are, of course, bound to respect, is a good deal of purely pictorial work which has no reference whatever to design and would not be tolerated a moment in any good continental school, least of all in those of France. This work includes such efforts as the painting of portraits and elaborate compositions of flowers and still life in oil as well as in water colors. The results are always bad and yet they are treated as if they were really important parts of the approved scheme. An enormous amount of time is wasted in English schools in the production of these things, which have no interest or value either pictorial or decorative. If this part of the official programme could be stricken out altogether and the French system of competitions in design substituted for the present scheme of recompenses for pupils' exercises the English schools would become the finest in Europe and would approach very nearly the model upon which the best American schools are organized.

THE "INSTITUTES" IN ENGLAND AND AMERICA.

For in a good many respects the English ideals are much more like those which prevail in America than those which are found elsewhere. The "Institute," for example, of the type with which we are familiar in America, in which the same opportunities are afforded to girls as to boys, and in which the art and technical courses are but parts of a system so comprehensive as to include instruction in all branches of housekeeping and commercial work; in which the arts of design are studied side by side with cookery and dressmaking, and where technical training advances with equal steps by the side of shorthand and typewriting; where, moreover, the gymnasium, the tennis court and the cricket field are thought quite as much of and as amply provided for as the studio and the lecture room—all this is as characteristically English as it is popular in America, and although no English "institute" can boast such fine buildings or such thorough appointments as either the Drexel, in Philadelphia, or the Pratt Institute, in Brooklyn, there are many exceedingly good schools which are conducted on similar plans.

HOW THE MEDIAEVAL GUILDS SERVE MODERN NEEDS IN ENGLAND.

They are usually established, partly by private philanthropy and partly by various industrial guilds and societies which have survived, in name and organization at least, from mediaeval times. In London these guilds are often very wealthy and some of the best technical schools and institutes are owned and managed by them. The Textile School, Leeds, for example, which is certainly one of the

best in England, was established and is maintained entirely by the Cloth Workers Company, of London. It is conducted as a department of Yorkshire College, and, of course, derives a good deal of support from the fees of pupils and other sources. But the Cloth Workers' Company has not only built and equipped the very admirable buildings which it occupies, but contributes annually \$12,500 (£2,500) to its support.

This is only a sample of the kind of service that is rendered by these old guilds to which we have, of course, nothing that at all corresponds in America.

Perhaps the most flourishing and, on the whole, most efficient of the London "Institutes" is conducted by the Guild of Goldsmiths, and similar service is rendered by the "Skinners," the "Drapers" and I don't know how many others of the old companies. The city, or rather the county, of London has also done a great deal within the last year or two to assist this work. One of the departments of the County Council by which London is governed, or through which it works, is the Technical Education Board, which has adopted the very sensible method of assisting existing schools instead of establishing new ones, as it would have been sure to do if it had been an American organization instead of an English one. This board makes it its main business to disseminate information about the facilities offered by the different schools and institutes, to assist them by direct grants, if necessary, but mainly by means of scholarships in them, which are awarded to deserving pupils through a system of examinations, the successful applicants being assigned to the school which they seem to be best qualified to enter and their tuition being paid for by the board.

AN ENGLISH EXAMPLE WORTHY OF IMITATION.

In conclusion, it is impossible not to be profoundly impressed by the amount of interest in industrial education which all this activity—corporate and official, public and private—indicates on the part of our English relatives. In the quality of the instruction provided we have, as their own educators and officials freely admit, nothing to learn from them—our American schools set higher standards and cherish higher ideals, but in the generous scale on which the work is done; in the unhesitating unanimity with which its importance is recognized, and especially in the cordial spirit in which the different forces are united for co-operative service in a cause in which the cause of each is felt to be the cause of all, a splendid example, which we should do well to profit by, is set us by our cousins across the sea.

L. W. MILLER.

A BRIEF ACCOUNT OF SOME EUROPEAN SCHOOLS FOR INDUSTRIAL TRAINING OF GIRLS.

The attention given by the press of the country to topics relating to artistic and industrial training in public schools, gives ample evidence that the people take a real interest in these educational efforts which so closely concern the prosperity of all.

The preceding paper by Professor Miller, gives an interesting view of the efforts made by some of the countries of Europe to provide for the sons of their people ample opportunities for artistic training in Industries.

A recent number of the New York Weekly Family Paper, "The Outlook," [issue of October 10th, 1896,] contains a somewhat similar summary of European schools for the Industrial Training of Girls.

Although the topics relating to artistic and Industrial Training of girls, pervade the pages of the previous volume, Part II, of this Special Report, and an entire Appendix* is given to an account of similar training in European countries, I have thought it advisable to insert this article here, as containing a more recent statement; and, also, for the convenience of those interested in this phase of the subject, who may not have access to the previous volumes of this Report.

*See Art and Industry Report, Part II, Appendix O, pages 1095-1128.

(b.) INDUSTRIAL TRAINING FOR GIRLS IN THE PUBLIC SCHOOLS OF FRANCE, SWITZERLAND, GERMANY, AND ENGLAND.

[By JESSIE PATTERSON.]

My knowledge of the French system of sewing dates from the summer of 1894, when I had the pleasure of visiting ten of the schools which are under the direction of the Government in Paris, the department of public instruction called "Direction de l'Enseignement Primaire," also two that are conducted by the "Société pour l'Enseignement Professionnelle des Femmes."

In the École Maternelle, where the children are received at the age of two and a half years and remain until they are six or seven, I found that the rudiments of sewing were taught on pricked cards and canvas, the children often making their own designs and executing them in colored worsteds. Even at the age of five and six years the pencil and the needle are taught and used in connection with one another.

The next grade, the École Primaire Élémentaire, is divided into three classes—girls from six to nine, from nine to eleven, and from eleven to thirteen years. Here drawing and sewing are taught simultaneously, the former including not only designs for embroidery, but for various forms of industrial work, porcelain, jewelry, book-covers, etc.

In the sewing classes the stitches are first taught upon small pieces of material of good quality adapted to the fine work which was required of the pupils. In the school which I visited in the Rue des Volontaires, a very simple method of preserving the work was used. A box, possibly two feet long, one foot deep, and one and a half wide, was divided into small compartments, the number corresponding to the number of lessons given during the year, and in these the models executed at each lesson were placed. The models were not more than four inches long, and varied in width, sometimes being square and sometimes not more than half of the length. Each model had a gummed label upon it, on which the name of the girl and the mark given her work were written. After the necessary stitches in plain sewing had been conquered, feather-stitching, mending, and simple embroidery were learned. The application of the stitches was first taught on baby-clothes, which were less wearisome than large garments, and consumed less time and material.

In the second class the pupils are taught to take measures and to draught a round waist. In the third they are taught the theory and practice of draughting a basque waist, and the cutting and making of the same. In a supplementary class, which in the fourth year girls are permitted to enter by examination, they are taught further draughting of patterns, and the making of baby-clothes.

The next grade, the École Primaire Supérieure, must be entered by competitive examination. There are but two schools of this grade in Paris for girls, although advanced classes corresponding to them are attached to some of the Écoles Primaire Élémentaire. To enter these classes the pupils must be over twelve and under fifteen years of age. Over sixteen hundred girls were receiving instruction in these schools and classes. Sewing and industrial training were continued in them on the same lines as in the former school.

The Écoles Professionnelles I found most interesting. Six for girls and six for boys are supported by the Government in Paris, and many have been opened in the provinces. Two also are under the support and management of the Société pour l'Enseignement Professionnelle des Femmes, founded by Madame Eliza Lemonnier in 1862. These are designed at present to serve as models in methods and their application; and as the Government has adopted the principle of manual and professional training, the society is turning its attention to the development of other branches of employment for women.

MADAME LEMONNIER THE PIONEER OF THIS MOVEMENT IN FRANCE.

To Madame Lemonnier is due primarily the growth of practical education given by the State in France. She was born in 1805, and from early youth was interested in the development of thought and life, especially that of women. In 1848, during a winter of great distress, caused by the Revolution, she opened a workroom, where more than two hundred mothers of families received employment, which enabled them to support those dependent upon them. She then discovered how incapable the women were of helping themselves in practical work, and her first resolutions were formed to assist them to the extent of her ability. In 1852 some ladies assisted her in sending girls to an institution conducted by Fräulein Hildebrand in Frankfort-on-the-Main, and in 1856 eighteen ladies met in her parlor to found the Société de Protection Maternelle.

SCHOOLS IN FRANCE FOR THE INDUSTRIAL TRAINING OF WOMEN.

In 1862 this was further developed, and it received the name of Société pour l'Enseignement Professionnelle des Femmes. The first school was opened in October of that year, and a second one in 1864. The Exposition of 1878, when these schools received a gold medal, brought their work into notice; and in other countries, Switzerland, Belgium, and Italy, as well as in the large cities of France, professional schools were opened. The municipality of Paris speedily followed their example and opened its first professional schools, taking some of the buildings, and adopting the division of time and arrangement of studies of the Lemonnier schools.

PROGRAMME OF THE DAILY STUDENT LIFE.

The school year lasts from the fifteenth of September until the first of August. The day begins at half-past eight o'clock, and three hours are spent in the classrooms, the time being given to simple branches of study, elements of natural and physical science, principles of bookkeeping, drawing, hygiene, and domestic economy, sewing and cutting, gymnastics, the practical teaching of cooking, and foreign languages, which are elective.

At half-past eleven breakfast is taken, in a few cases the pupils returning to their homes, but more often bringing their food to the school, where it is heated for them. A large dining-room is also provided. At one school which I visited it was obligatory to take the breakfast prepared by the school, when soup, meat, and vegetables were served for seven cents. At half-past twelve the girls enter the work-rooms to receive, under professional teachers, instruction in dressmaking, cooking, laundry-work (ironing and cleaning), corset-making, tailoring, embroidery, drawing and industrial designing, and also the principles of business knowledge—an instruction which enables so many Frenchwomen to be valuable assistants in the commercial life of the family.

During the school year the pupils devote nine entire days to the kitchen, in three periods of three days each. In the morning they go to market, they then prepare the breakfast for themselves and three teachers, including the directress of the school, and the afternoon is devoted to the arrangement of the kitchen utensils, and all that pertains to the care of meats, vegetables, etc. These schools are entered by competitive examination, and the pupils must be not less than thirteen years of age. The course for the manual professions (as they are called) or trades lasts three years, and for the artistic professions four years.

In one school, that of the Rue Bossuet, a very interesting course of lectures on the history of costume was given by one of the teachers, the pupils being obliged to write them out and illustrate them; many of their note-books showed most remarkable skill. Diplomas are given at the close of the course, and I was told that graduates were never at a loss for positions.

For the first three months of the first year the time was devoted, in the sewing department, to the perfection of the stitches, usually on small pieces of material. Then underclothes were taken up, and the latter part of the year dressmaking was commenced. In the second and third years the work was done almost entirely for orders, which afforded a small revenue to the school. This was comparatively insignificant, however, for when the expense to the Government was sixty-five thousand or one hundred thousand francs, the returns were respectively four thousand five hundred or seven thousand. Still, there is always an economic side to French work, and the practical experience obtained by the execution of orders must always be of the greatest value.

In the Ecole Normale, which furnishes teachers for the communal schools, the pupils must all include sewing in their course of study, each one being required to prepare a book of models to be used as a standard for her scholars. Much practice work is also done on garments which are given to the poor.

The Cour Normale is a class attended by teachers in the communal schools who wish to fit themselves for higher positions. The class meets each Thursday afternoon for three hours during nine months, October to June. In 1894 there were thirty-six members. Half of the time (one hour and a half) is devoted to sewing, and the remainder to industrial designing. In addition, one specimen of needle-work is completed at home each week. Much that was shown me was most exquisite. The draughting of garments is also taught. This course may be taken by correspondence.

GIRLS' TRAINING SCHOOLS IN GERMANY.

In Germany, in the high school at Wiesbaden, two hours a week are given to sewing. It is first taught in the fifth school year, after instruction has been given in knitting, crocheting, and dressmaking. In the sixth sewing year the "Nähtuch,"

giving the simple stitches, is used; in the second year, patching; in the third year, darning and the making of a chemise; and in the fourth year, embroidery. In the common schools three and four hours a week are devoted to sewing, and more under-clothing is made.

GIRLS' TRAINING SCHOOLS IN SWITZERLAND.

In Switzerland, in the primary and high schools, the length of time given to sewing is much the same as in Germany; and a system of samplers is used. At the Manual Training School, of which Herr Schmid-Linder is the Principal, and which was supported, until the time of my visit to Basle in 1894, by the Association of Charities (which so wonderfully carries on the work for the poor in that city), young women receive instruction in sewing, dressmaking, cooking, etc. The methods employed have been adapted from the French, and the teacher in charge of the dress-making department has received her instruction from Madame Guerre, the teacher in the professional schools in Paris.

Belgium and Italy have also followed the French lines, and the former country has established many schools and classes for household training and instruction throughout the factory and mining districts.

INDUSTRIAL TRAINING OF GIRLS IN PUBLIC SCHOOLS IN ENGLAND.

In England sewing is taught in all the public schools, three hours a week being devoted to it in the schools which I visited. The sewing-teacher had the assistance of the pupil-teachers, and much simultaneous instruction with drills was given; large frames were used to illustrate all stitches. Miss Loch, the Superintendent whom I had the pleasure of meeting, had two hundred and fifty departments under her charge. The laundry schools seem most admirably planned. Mrs. Lord, the Superintendent, had fifty centers (as they are called) under her direction, the first one having been opened in 1890. The Government had made grants for one hundred and two; but the necessary teachers had not been fitted to take charge of them.

One lesson a week, of two hours and a half, was given to each child; each teacher had an assistant; the course consisted of twelve lessons, and might be repeated a second year. The laundries were small buildings, detached (as were the kitchens) from the school-houses. Those who were to receive instruction were selected from the older scholars of different schools in the neighborhood, and they brought garments from home—their father's shirts, baby sister's dresses, etc. In addition to the practical washing and ironing, they were taught something of science and chemistry. Many thousand children received instruction during the year. Evening classes were also held, each teacher being allowed one a week.

There were one hundred and fifty cooking centers, the first one having been opened twenty years before. Fourteen lessons comprise a course. The buildings and selection of pupils were planned as for the laundry classes, and part of each lesson was devoted to the preparation of dishes which could be sold to the teachers for lunch or dinner. The menus and utensils were simple and adapted to the children of the poorest homes. The latest development of domestic training in the schools under the direction of the London School Board was a Housewifery Class. A small house had been furnished and fitted in every part. Here groups of children were taken and trained in everything pertaining to neat housework. This plan had been in operation so short a time when I was in England in 1894 that it was impossible to judge of the results; but Mrs. Lord, to whose enthusiastic interest in her work the experiment was due, had the greatest faith in its success.

At Whiteland's Training College three hours and a half a week were devoted to sewing by those preparing themselves to be teachers, and in various cities in England there are schools where women can obtain the necessary instruction for the cooking and laundry, as well as for the sewing, classes.

I have given an outline of the industrial training of the girls in several countries, and of those who are to be their guides. It interested me intensely, and while we must rejoice in the opportunities for higher thought and study which are given in this country to those who are fitted for them, I long to see more compulsory instruction brought into the lives of all our girls. While it seems to me that we have more originality and breadth in our work here, we have not the inspiration of tradition or of the beautiful surroundings which are on every side in Europe. There is not with us the sense of perfection of detail which is inherent, certainly, in the French nation. One understands, in studying the detail of these schools and the thoroughness of their training, why it is that the French have excelled in so much industrial work; and I believe that the Government is right in feeling that skilled work is the happiest work, and that in encouraging this, and also the creative side of labor, they are doing much to make contented and useful citizens.

INDEX.

A.

- Abell, Mr. A. S.**, Legacy to Maryland Institute, given by the late, a lifelong friend of the Institute, 224.
- Academy, "Royal Building,"** in Berlin, Prussia, Pupils of the, show at Vienna, wall charts, examples, and studies for Art historical instruction, 879.
- Activities of Cooper Union, Varied,** Shown by list of Instructors for 1890-91, 415, 416.
- Adams, Jr., Hon. Charles Francis,** Extracts from Report on Vienna Exposition by, 835-837.
Importance of European Art Education movement, stated by, 861.
- Addresses,** Extracts from, delivered at Commencement of Maryland Institute Schools, June 5th, 1888, 226-241.
- Adelphi Academy** of Brooklyn, N. Y., Reference to, by Mr. Charles Pratt, 450.
- Aged, The Duties of the,** As stated by Peter Cooper, at the Commencement of 1866, 425.
- Allen, Mr. Murston,** Death of, in 1868, commemorated by Resolutions of Board of Trustees of Ohio Mechanics' Institute, 615.
Trustee in 1854, makes large donation toward freeing the Institute from debt, 614.
- Allison, James,** President Ohio Mechanics' Institute, Report by, in 1891, 633-635.
- Amateur Art,** General worthlessness of, 217.
- Amateur Art Pupils,** Value to, of association with the students in the Maryland Institute Art Schools, 217.
- America,** Doubts expressed as to possibility of immediate Art industrial development in, 890-901.
The freedom of, contrasted with past European tyrannies, 1063.
Interesting theories as to education in, 900.
Low state of public taste in, in 1876, 860.
- American, The Baltimore,** Early account of Maryland Institute Night Schools of Design, from, 273-275.
- American Boys,** Discussion concerning the best Technical Training for, 787-789.
- American Educators,** A lesson for, 855.
- American Educational Philanthropists,** Several distinguished, referred to, 449.
- American Exhibitions** referred to, 733.
- American People,** Industrial independence of, largely due to the early founders of Mechanics' Institutes, xliii.
- Americans,** A lesson for, 861.
The Industrial problem for, 862.
Public taste of, before 1876, no better than that of England before 1851, 860.
- American Students** should study their professional course in America, 784.
- American Workmen** contrasted with European, 764, 765.
- Andersen, Hans Christian,** Reference to an apocryphal by the late, 1061, 1062.
- Andersonian Institute of Glasgow,** Referred to as the model of the Franklin Institute, 10.
- Annual Report of United States Commissioner of Education for 1893-1894,** See chapter on Manual Training in the, 1073.
- Appendices** to Part III of this Report, 729-1119.
Contents and order of arrangement of the, xlviii-lii.
For full list of contents of, see general Table of Contents, xix-xx.
General introduction to, 731-733.
Summary of contents of, 731-733.
- Appendix B,** Need of Technical Education in the United States recognized, 735-741.
Addresses on Technical Education before Pennsylvania State Teachers' Association, in 1874, by George Woods, LL. D., 735-741.
Concise summaries of contents of, xlviii-xlix, 731-732.
Introduction to, 735.
- Appendix S,** Papers relating to the present need for Elementary Training in the Industrial Arts, 743-771.
Concise summary of papers comprised in, xlix-l, 732-745.
Introduction to, 745.
Table of contents of, 743.
- Appendix T,** Papers relating to Elementary Technical Training, 773-791.
Concise summary of contents of, 732.
Introduction to, 775-776.
Table of contents of, 773.
- Appendix U,** Papers relating to European Artisan and Industrial Art Schools, 793-820.
Account of European schools in, 733.
Concise summary of contents of, l, 733.
Introduction to, 795.
- Appendix V,** Papers relating to Vienna Exposition of 1873, 821-901.
Concise summary of contents of, li, 733.
Introduction to, 823-825.
Table of contents of, 821.
- Appendix W,** Papers, miscellaneous and supplementary; with account of some new educational institutions for Industrial and Technical Training in the United States, 903-1119.
Concise summary of contents, li-lii, 905-906.
Introduction to, 905.
Table of contents of, 903.
- Apprenticeship,** Causes of decay of, 752.
Decay of, in England demands new methods of instruction, 749.
- "Apprenticeship of the Future,"** Article on the, by Professor Sylvanus P. Thompson, 751.
- Apprenticeship of the Past,** Described, 752.
- Apprenticeship** still exists in Germany, 749.
- Arcadian Club of New York City,** Account of reception given by, to Peter Cooper, in honor of his 84th birthday, 354-363.
List of officers of, for 1874, 355.
- Architecture,** The building occupied by the Drexel Institute is a notable example of artistic, 560-561.
- Archer, Professor T. C.,** Reference to Russian School of Art Industry by, 861.
- Armour Plate, Chicago, Illinois,** Account of, 910-911.
A part of the endowment of Armour Institute, 911.
- Armour Institute, Chicago, Illinois,** Buildings and equipment of, 913.
Department of Architecture, 920-921.
Department of Chemistry and Chemical Engineering, 918-920.

- Armour Institute, Chicago, Illinois,**
 Department of Commerce, 926-927.
 Department of Domestic Arts of, comprises courses in Cooking, Dressmaking, and Millinery, 923-926.
 Department of Electricity and Electrical Engineering, 916-918.
 Department of Library Science, 921-923.
 Department of Mechanical Engineering of, 915-916.
 List of Directors and Faculty of, 930-931.
 Department of Music, 927-928.
 Normal Kindergarten Department, 928-930.
 Preliminary words to account of, 911-912.
 Purpose and organization of, 912-913.
 Schedule of five courses in Scientific Academy of, 914-915.
 Statements from official circular of 1895, 912-931.
 Valuable improved real estate known as Armour Flats, a part of the income-producing endowment of Armour Institute, 911.
- Armour Mission.** Military and Gymnastic features of, 910.
 Social organizations connected with, 909.
- Arnold, of Rugby, Dr.,** quoted, 1047.
- Arrangement of Parts III and IV** described, 731.
- Art Adornment** of public schools in various cities referred to, 516.
- Art and Industry Report,** General plan and purpose of the, xxxix-xi.
 Purpose of present volume of the, xxxvii-xxxviii.
 Reference to Part III of the, xxviii.
 Summary of the several volumes of the, xxxvii-xxxviii.
- "Art and Mechanical Education,"**
 Theme of Superintendent MacAlister's address before Spring Garden Institute, 1886, 116.
- Art,** Academic training in, makes many mediocre artists, 813.
 A check on indiscriminate competition, 239.
 A return to the idea of, in Industrial and Technical Training indicated, xxxiii.
 Ancient Greek, Noble lesson of, 901.
 Antique, must be approached through the Middle Age masters, 871.
 Claims of, recognized in Part II. See note to page xxix.
 Essential requisites for instruction of the people in, 866.
 France receives great returns for Governmental encouragement of, 894.
 Hope for development of, 853.
 Immense money value of French, 894.
 In what consists the triumph of, 852.
 Influence of, on morals and manners, in danger of being overestimated by enthusiasts, 1057-1058.
 Notable increase since 1876 in the United States of facilities for training in, 824-825.
 Probabilities of education in, in America, 900.
 What Paris does for, 890.
 Purpose of, as shown by William Morris, 237-239.
 Statistics showing commercial value of, in Report by Principal of Ohio Mechanics' Institute, 1887, 639.
 Teaches how labor may bless laborer and consumer, 234.
- Art Carvings** on granite bridge in Central Park, New York City, Costly, suffered to be hidden, 765.
- Art Collections of Pratt Institute,** 460-461.
- Art Decoration of Schoolrooms,** Early movements for, referred to, 1053.
 Brooklyn Exhibition in 1896 of articles for the, 1053-1059.
 Reference to early promoters in England and Boston, Mass., of movement for the, 1053.
- Art Department of Pratt Institute, Brooklyn, N. Y.,** Applied design, 500.
 Architectural Drawing, 499-500.
 Art Needlework, 501.
 Clay Modelling, 501.
 Details of divisions of, 497-498.
- Art Department of Pratt Institute, Brooklyn, N. Y.,** Domestic Science classes, 502.
 Lectures on Art, 502.
 Mechanical Drawing, 500.
 Normal Art class, 499.
 Opening of a Life class, 498.
 Rapid growth of the, in 1890, 481.
 Regular Art course, 498.
 Report of, for 1890-1891, 497-502.
 Technical High School classes, 501-502.
 Three divisions in afternoon classes, 499.
 Wood Carving, 501.
- Art Education,** Promotion of, in European countries, 839.
- Art Gallery,** Free public, opened by Pratt Institute, 452.
- Art Industry,** Reason why American workers shall be trained in, 861.
- Art Industries,** How museums benefit English, 829.
 Importance given to, in the Vienna Exposition, 838.
 Training in High Art, the surest way to develop success in, 455.
- "Art in Every Day Life,"** Responded to by Col. I. Edwards Clarke, 205-208.
- "Art in Public Schools,"** Responded to by Professor M. A. Newell, 208-209.
- Art Instruction in Cooper Union Art Departments,** Set forth by Curator Zachos (1877), 431-433.
- Art Knowledge,** Value and importance of, 1032-1033.
- Art Museums,** Importance of, 839-840.
 Potent in increasing the culture of the community, 853.
 Proofs of value to France of, 827.
 Should be permanent depositories of best examples shown at International Expositions, 826-827.
 Value of, in educating the public as well as the Art workers, 855.
- Art Objects,** Reproduction of, for local museums, 769.
- Art of France,** Characteristics of the, 853.
- Art of the Potter,** Progress and vitality of the, 854.
- Art Industrial Museums,** Concise accounts of European (see notes to pages, 873-874), 873-874.
- Art Qualities,** Increase of values due to, 850-851.
- Art School** with Evening Class opened by Columbus Art Association, January, 1879, 725.
- Art Schools** a necessity, 158.
- Art Schools of the Maryland Institute,** Report for 1882 on the, 163.
- Art Training,** Elementary, provided by Pratt Institute, 490.
- Art Works for Schoolroom Adornment and for School Use,** Suggestions for neighborhood circulating Art collections of, 1057.
- Art Works,** Suggestive Japanese method of showing, 1057.
- Artisans,** What is the education needed by, 753.
- Artisans' School, Rotterdam, Holland,**
 Account of the, 795-799.
 A successful European experiment of Industrial Training, 795.
 Elementary studies in schoolrooms of the, 797-798.
 Number of instructors in the, 798-799.
 Number of pupils in the, 799.
 Purpose of the, 797.
 Practical technical work in the, 797.
 Supervision of Graduates of the, for five years, 799.
 Training in Drawing in the, 798.
 Work of pupils of the, shown at the Centennial Exposition, 795.
 Workshop of the, 797.
- Artist,** The Great, is individual, 867.
 Guiding purpose of the true, 1058.
- Artistic Industries,** Value of, early recognition of, 497.

- Artistic Manufactures**, New England needs to develop, 840-841.
- Artistic Skill**, Commercial value of, 856-857.
- Artists**, Difference between the Great Masters of the Renaissance and modern, 844.
- Arts Few**, Trades many, 777.
- Art Studies**, Various, shown at Vienna; praised or criticized, 878-880.
- Art Scientific Congress**, Meeting of, in Vienna in 1873, 870.
- Art Work**, Indifference to, shown by authorities of Central Park, New York, 765.
- Art Works**, Superior technique of the, shown at Vienna, 852.
Failure of many modern, to impress, 852.
Statistics of, shown at Vienna, 852.
- Astral Branch Library of Pratt Institute**, 545.
- Atheas**, Comparison of the weak, modern work shown at Vienna by School of, with the casts of the immortal fragments of Classic Art from the ruins of the Parthenon, 901.
- Atkinson, Mr.**, Speaks of the advantage of hand work and shows how most cotton machinery is but a copy of prehistoric implements, 791.
- Austria**, Adopts Elementary Technical training, 749.
Art Industrial Education in, 860.
Concise account of the Technical schools in, 848.
Excellence of people's schools in, 860.
Value to, of Industrial Art training, 849.
Introduction in 1850 of Drawing in schools of, 869.
Methods of Art training in, commended, 847.
Museum of Art and Industry in Vienna, 872.
Technical Industrial training long established in, 848.
- Austrian Department of Commerce**, founds in Steyer, Anetris, a practical Technical School with workshops for training in artistic manipulation of iron and steel, 786.
Praises the results obtained by the Komotau school, 786.

B.

- Baird, Mr. John**, Establishes prizes in 1880 for the Architectural Drawing class in Spring Garden Institute, 92.
- Baldwin Locomotive Works**, Establishes prizes in 1880 for excellence in Mechanical Drawing in classes of Spring Garden Institute, 92.
- Baltimore, Maryland; and Florence, Italy**, contrasted, 166.
- Baltimore**, Educational resources of, 155-156.
Establishment of a city Polytechnic school in, urged by Hon. Bradley T. Johnson, 165.
Important Art collections belonging to private citizens of, 236.
The natural beauties of the site of, 236.
- Baltimore and Ohio Railroad**, Origin of, 404.
- Bancs, President**, in Annual Report of January, 1887, refers to proposed reorganization of Franklin Institute, 28.
- Baronrd, Dr. W. T.**, Report by, quoted from, by Ex-Mayor Lstrobe, of Baltimore, Md., 222.
- Barratt, Mr. Oliver**, President, General Society of Mechanics and Tradesmen of the City of New York. Inaugural address (January, 1891) by, 324.
- Bavaria**, Bureau of Reproductions in National Museum of, 831-832.
Concise statement of Educational exhibits of, 876.
Industrial Improvement schools in, 877.
Method of teaching Drawing in schools of, 876.
National Museum of, 831-832.
- Belfield, Mr. Henry**, Succeeds Mr. Brownell as principal of Evening High School of Chicago, in 1881, 721.
- Belgium**, Successful industrial training in, 164.
- Bellamy**, "Looking Backward," by, referred to, 1068.
- Bennett, Professor Charles A.**, Teachers' College, New York. Closing words of the conference, by, 1105-1106.
Introductory remarks by, at conference on Manual Training in Teachers' College, 1096.
- Berkeley School**, Reference to Manual Training exhibit by pupils of, in 1896, 1074.
- Berlin**, German Industrial Museum in, 873-874.
- Biddle, Esq., Nicholas**, Endorses the plan of founding Franklin Institute, 10.
- Birbeck, Dr., of Glasgow**, Early in this century gave the original impulse to the founding of Mechanic Institutes in Great Britain, 21.
- "The Blacksmith and King Solomon,"** 306.
- Blaine, Hon. James G.**, Letter from, regretting inability to attend opening of Drexel Institute, 578.
- Blake, Professor William P.**, Report by, Special Commissioner for Massachusetts to Vienna, 854-857.
- Board of Examiners** for giving diplomas to skilled artisans suggested, 762.
- Bogert, Mr. Albert G.**, President, General Society of Mechanics and Tradesmen of the City of New York. Inaugural address by, 323-324.
- Bohemia**, Elementary Technical training in, 781-782.
- Bonaparte, Esq., Charles J.**, Contrast between the American ideas of the free common schools and that expressed by, 171-172.
1883, Maryland Institute, Commencement address by, considered, 171-172.
Eloquent plea for Industrial Art training by, 173-174.
- Bond, President James H.**, Thirty-third Annual Report of Maryland Institute by, 153-155.
- Boston**, Work in drawing shown by schools of, 901.
- Böttcher, Professor C.**, Art illustrations shown by, 879.
- Baykin, Mr. J. C.**, United States Bureau of Education. Reference to valuable table of Manual Training statistics in Report of 1893-94, prepared by, 1106.
- Brady, Hon. John R.**, Response by, at the Centennial banquet of the General Society of Mechanics and Tradesmen, 312.
- Brainard, Mr. Cephas**, Paper on Educational work in the Y. M. C. Association by, 1019-1027.
- Brooklyn Exhibition of Art Works for Decoration of School Rooms**, Catalogue of, 1054.
Account of, 1053-1059.
Remarks by author of this Report on the movement illustrated by the, 1055-1059.
- Brooklyn Institute of Arts and Sciences**, Laying corner stone of new building of the, 1059.
List of officials of the, 1060.
- Brougham, Lord**, Was prominent in encouraging opening of the first Mechanics' Institute in Great Britain, 21.
- Browne, Esq., Peter A.**, Urges the plan of the Franklin Institute at public meeting in Philadelphia, 10.
- Brownell, Mr. James H.**, Succeeds Mr. Peabody, as principal of Evening High School of Chicago in 1878, 721.
- Browning, Robert**, Quotation from poem by, 1056.
- British Museum**, Value to one workman of the cast of the head of a horse from the Parthenon frieze, in the, 763.
- Bruseels**, Normal School of the Arts of Design, Saint Josse-Ten-Node, 804-805.
- Bryan, Mr. Thomas J.**, The valuable collection of old masters belonging to, formed a free Art Gallery in Cooper Union, for some years, 374.
- Bryant, William Cullen**, Remarks by, at Arcadian Club Reception to Peter Cooper, referred to, in account in the New York Evening Mail, 361.

- Buildings**, The temporary exposition, of Cincinnati, 621.
 The permanent exposition, of Cincinnati, 621.
Burk, Mr. Addison B., Concise report of several American Industrial and Technical Schools made by, referred to, 561.
 Long connected both with Spring Garden Institute and the Public Ledger, issues a tentative report on American Technical Schools about 1889, 561.
 For many years the efficient Secretary of the Spring Garden Institute, was chosen Vice-President, in 1889, 104.

C.

- California**, The Industrial Education movement in the schools of, Account of, 957-968.
 Drawing generally taught in Elementary schools of, 965.
 The Industrial Education movement in the schools of, Introduction to account of, 957-958.
 Status of Manual Training in schools of (Jan. 1, 1896), 965-968.
California School of Mechanical Arts, San Francisco, Cal., Account of, 989-998.
 Buildings of the, 990.
 Endowment of the, 991.
 Historical notes of the, 991.
 Interesting Inventory of equipments and their cost in each department, 985-998.
 List of members of Corporation and Faculty of the, 991.
 Location and buildings of, 992.
 Proposed courses of instruction in the, 990-991.
 Regulations, plan of instruction and courses, 993-995.
 Tuition free, but pupils furnish books and edge tools, 992-993.
California Teachers' Association, Address on Manual Training by President Keyes, before the, 958-965.
Campbell, John, the Grandfather of Peter Cooper, Reference to, by Ex-Mayor Hewitt, 309.
Campbell, Mr. James B., Called from Pratt Institute to be Director of the Jacob Tome Institute in 1894, 936.
Carothers, Superintendent George R., Address by, June 13, 1888, 706-708.
 Letter from, of the Technical School of Cincinnati, 686.
 On the name "Technical," 636.
 On the value of Industrial training to girls, 704.
 Resigns the principalship of the Technical School of Cincinnati, July, 1888, 711.
 Statement by, of the general plan of the Technical School of Cincinnati (1888), 701-704.
Carroll, Mr. C. F., Superintendent Public Schools of Worcester, Mass., Paper by, xxiv-xxvi.
 "Paper on Manual Training in elementary schools" by, 1092-1095.
Carter, Mrs. Susan N., Successor, in charge of Woman's Art Classes of Cooper Union, New York, Reference to, 455.
Carter, Professor Charles M., European Industrial Art Schools, by, 799.
Carter, Esq., John M., Response by, at Dinner to President Cushing, in 1887, 210-211.
Casts, Large collection of, belonging to New York Turnverein, 339.
Catalogue of Pratt Institute for 1891-1892, Descriptions of buildings, departments, and courses of study from, 509-559.
Centennial Exhibition in Philadelphia in 1876, General influence of the, in quickening interest in artistic industries, 431.
 Prospective importance of the, 841.
Centennial Exposition of Cincinnati in 1886, Concise account of the, 621-623.
- Centennial Exposition of Cincinnati in 1886**, Congress appropriates funds to enable United States Departments to send exhibits to the, 623.
 One million of visitors to the (1888), 625.
 Summary of the, 624-625.
Ceramic Art, Museums of, Need in America of, 856.
Ceramic Art, Reasons for European superiority in, 855.
Ceramic Arts as shown at the Vienna Exposition, Mr. Blake's report on the, 854-857.
Cesario Collection, Reference to the, 856.
Champion, Mr. R. E., Succeeds Mr. John B. Heich as principal of the School of the Ohio Mechanics' Institute, in 1887, with the title of Superintendent, 663.
 Extracts from Report for 1888-89 of School of Ohio Mechanics' Institute, by, 669-670.
 Extracts from annual report for 1889-90 of School of Ohio Mechanics' Institute, 670-672.
 Industrial and Art School of Ohio Mechanics' Institute, Extracts from letter of, 680.
Chapter I, Analytical table of contents of, 7-9.
Chapter II, Analytical table of contents of, 7-9.
Chapter III, Analytical table of contents of, 130-133.
Chapter IV, Table of contents of, 291-293.
Chapter V, Analytical table of contents of, 348-350.
 Account of Cooper Union, New York, Pratt Institute, Brooklyn, and Drexel Institute, Philadelphia, 348-447.
Chapter VI, Analytical table of contents of, 611-612.
Chapter VII, 683-728.
 Table of contents of, 683-684.
Chapters and Appendices, General Tables of Contents of, III-XX.
Charter and By-Laws of Franklin Institute, 12-15.
Chicago Evening High School, 721-722.
Childs, Mr. George W., Established prizes for Spring Garden Institute class in free-hand drawing, in 1880, 92.
 The intimate friend of Mr. Drexel, and warmly interested in his educational plans, 561.
 Receives the guests at the opening of Drexel Institute, 562.
Church, Mr. Arthur L., Succeeds Lieutenant Crawford, in Spring Garden Institute, Philadelphia, who resigned in 1886 to accept position of Superintendent of the City Manual Training School, 97.
Cincinnati, Henry L. Fry, the famous Art Carver in wood, gives artistic distinction to the city of, 711.
Cincinnati, Music Hall of, Built to promote exhibitions, 621.
Cincinnati Technical School, Account of, 684-720.
Cities, Increase of, enforces changes in employments, 1065.
 Why population leaves the country for the, 1070.
City? What gives Fame to a, 419.
Civilization, How men of wealth advance, 1071.
 Types of High, 1068.
Clarke, Mr. Casper Purdon, How the Art products of India were collected for South Kensington by, 767.
Clarke, J. Edwards, Maryland Institute Commencement Address (1888) by, subject: "The Message of Art to Modern Men," 230-240.
 Response by, at Dinner to President Cushing, in 1887, 205-208.
 Report by, of visit to Drexel Institute, in June, 1892, 604-608.
Clarkson (Thomas S.) Memorial School of Technology, Potsdam, N. Y. (For full index see under Thomas S. Clarkson Memorial School), 999-1011.
Clinton, De Witt, Efforts by, for free education in New York City, 409.
Cole, Sir Henry, Collected objects of ugliness in English manufactures to illustrate value of English qualities by contrast, 851.

- Cole, Sir Henry**, England's debt to, 770-771.
- Collyer, Rev. Robert**, Response by, at Centennial Banquet of General Society of Mechanics and Tradesmen, 307-308.
- Columbia College, New York City**, Hon. De Witt Clinton, graduate of, 409.
- Columbus Art Association**, Organized in 1878, 725.
- Columbus, Ohio**, Drawing first in public schools of, in 1874, 722.
- Free Evening Industrial Drawing School of, 722-725.
- Free Evening Industrial Art School for both sexes opened in November, 1874, 722.
- Free Evening Art School of, Illustrations showing practical value to mechanics of the, 725.
- Commercial Club of Cincinnati**, Historical sketch of action of the, in contributing to the founding and support of the Technical School, 714-716.
- Common Schools**, Significance to the Community of the education given in the, 1066.
- What the, are doing to meet the new conditions, 569.
- Community**, Value of Institutions of Learning to the, 409.
- Worth to the, of skilled Art workers, 763.
- Community at Large**, Value to the, of private educational experiments undertaken by great-hearted men, 486.
- Condition of Manual Training** in relation to other studies in the public-school courses of study, xxiv-xxvi.
- Contents**, General Tables of, III-XX.
- Cooking**, Courses in, as given in the department of Domestic Science of Pratt Institute, 526-528.
- Lectures on, by Professor Blot, given in Cooper Union Night School in 1866, 426.
- Cooking School of Pratt Institute**, 464-465.
- Cooper, Edward**, Joins with his sister, Mrs. Sarah A. Hewitt, in meeting cost of rebuilding Cooper Union, 393.
- Cooper Institute**, Its establishment due to the excellent example set by the Society of Mechanics and Tradesmen, 309.
- Cooper, Peter**, Abstract of pamphlet account of Arcadian Club reception given to, 354-364.
- Account of Address presented to, by Students of Cooper Union, in recognition of his eightieth birthday, 353.
- Anticipates the dangers to workmen from the rapid changes in methods of manufacture, 407.
- Autobiographical statements by, in 1874, 356-357.
- Associated for seventeen years in work of the free-schools of New York City, 409.
- Children of, defray cost of reconstruction of the "Cooper Union" building, 393.
- Debt owed to, by the people, 572.
- Early recognized value of Art qualities in products of industry, 407.
- Eightieth birthday of, made memorable by his gift to the Institute, 353.
- Inventiveness of, the foundation of his fortune, 405.
- Letter written by, on his ninetieth birthday, 384.
- Life and career suggests that of Benjamin Franklin, 350.
- Memorial resolutions concerning the late, passed by Union League Club, of New York, May 10, 1883, 351-353.
- On his eighty-fourth birthday, Remarkable reception given to, by Arcadian Club, 354-363.
- A pioneer in Railroadng, 403.
- President Low's recital of early life of, 402-404.
- Programmes of Arcadian Club reception given to, 355-356.
- Reason for changing his first intention to endow the General Society of Mechanics and Tradesmen given by Mr. Hewitt, 309.
- Succinct statement of the gifts to the community made by, and his anticipated by Microfilm
- Cooper, Peter**, Tribute to engineering ability of, paid by Baltimore and Ohio Railroad authorities in 1880, 403.
- Cooper Union, New York City**, Abstract of Fifth Annual Report by Trustees of (1864), 376-378.
- Account of, 350.
- Account in detail of the Free Night School of, 416-447.
- Addition to building in 1881, 383-384.
- Additional room for Women's Art School (1889-90), 399.
- Aims only to supplement public educational efforts, 384.
- Aims of, 409.
- Appeal in 1887 to Community for aid in their work, by Trustees of, 393.
- Annual statement of receipts and expenditures of, for the year 1890, 414-415.
- Attendance in Night School of Art for 1879-80, given by Mr. George W. Plympton, Director of Night Schools of, 434.
- Brief recapitulation of the founding and purpose of, 416-418.
- The building, equipment and endowment of, represent gifts to the Community by one family which aggregate \$2,000,000, 397.
- Building reconstructed (1884-1886), 393.
- By-Laws relating to Department of Instruction of, 385-386.
- Charter of, and Deed of Trust executed by Peter Cooper, 365.
- Classes in Architectural, Mechanical, and Free-hand Drawing organized when Night School was first opened, 419.
- Class in Telegraphy, Teachers paid by Western Union Company, 392.
- Class in Vocal Music, 419.
- A Cooking School opened in 1866, 424.
- Courses of Instruction set forth by the Curator in Fourteenth Annual Report, 1873, 430.
- Course of Lectures for 1890-1891, 413.
- Curator of, on importance of Technical Training, 435.
- Different problems concerning attendance of pupils met with at opening of Night Schools of, 420.
- Diploma of, Condition of competition for the, 424.
- The Drawing classes of the Free Night School of Art described, 444-445.
- Example of the founder of, followed by Mr. Pratt, of Brooklyn, and Mr. Drexel, of Philadelphia, 412.
- Extracts from Tenth Report by Trustees of, showing utter absence of educational facilities in New York City early in this century, 425-426.
- Extracts from Twenty-second Annual Report by Trustees of, 383-384.
- First Board of Trustees of, 365.
- First opens Free School of Telegraphy for women in 1868-1869, 428.
- First statement of Trustees subsequent to death of Mr. Cooper, 386-389.
- Free Art Gallery of Old Masters loaned to, by Mr. Thomas J. Bryan, 374.
- Free Night School of, divided into two grand divisions, 423.
- Generous gifts to Art School in 1866-1867, 433.
- Gifts to, during 1887-88, 397.
- Gifts to Library and Art collection of, 1889-1890, 400.
- Grand medal of, Conditions for winning, 424.
- Grand medal of, first awarded Miss Roselinda H. Palmer at Commencement of 1866, 425.
- The history of the Free Night School of Science and Art of, for over thirty years, affords valuable lessons for educators, 418.
- Importance given to Drawing, in the School of, 373.
- Increase of course in Night School of, to five years, announced in 1866, 422.
- Individual character of the Free Night School of, noted, 417.
- Library of, first opened during Sunday, on October 6, 1872, 379.
- List of Art Lectures of, during 1887-1888,

Cooper Union, New York City, List of first Trustees and Teachers, 376.
 List of Instructors in Night School of, 440.
 List of Instructors in Night School of Art of, for 1890-1891, 447.
 List of Trustees, Officers, and Instructors, 1877-1878, 383.
 List of Officers and Trustees for 1883, 391.
 List of Trustees, Officers, and Instructors of, for 1890-1891, 415-416.
 Night classes of, Rapid growth of the (1873), 431.
 Original Trustees of, all, except Mr. Cooper, living in 1891, 412.
 Picture gallery of, 378.
 Printed Report issued 1887, containing Twenty-sixth, Twenty-seventh, and Twenty-eighth Annual Reports, 392.
 Proposed enlargement of Reading Room and Library of, 411-412.
 Report by Mr. R. W. Raymond, acting manager of the Lecture course of, 395.
 Report by George W. Plympton, Director of Night School for, 1883-1884, 440-441.
 Report of Director of Free Night Schools, 1887-1888, 443-444.
 Report by Director Plympton, for 1888-1889, 445-446.
 Report by Director Plympton, for 1889-1890, 446.
 Report by Director Plympton, for 1890-1891, 446-447.
 Rules, regulations, and studies of Free Night Schools (1882-1883) of, 437-440.
 Statement by Trustees of the development of, during first five years, 376-378.
 Statements in Tenth Annual Report by Trustees of, 379.
 Statement by Trustees of, in 1887, 392-394.
 Statement by Trustees in thirty-second Annual Report (1890-1891), 410-413.
 Statistics of attendance in Night School of, (1863-1864), 377.
 Statistics of, for 1883, 390-391.
 Statistics of attendance on schools of, (1883-1884), 391.
 Statistics of attendance in all Departments of, 1887-1888, 396.
 Statistics of attendance of pupils (1888-1889), 398.
 Statistics of attendance on schools of (1889-1890), 399.
 Statistics of attendance on Night Schools of, for 1890-1891, 447.
 Succinct statement of the work of, for twenty years, by Dr. Zachos, 379-382.
 Summary of First Report by Trustees of, (1860), 373-376.
 Summary from twenty-ninth Annual Report (1887-1888) of the work in the several Departments of, 395-398.
 Summary of Thirtieth Annual Report (1888-1889), 398-399.
 Summary of attendance for 1877-1878 on Free Night Schools of, 382-383.
 Summary of Thirty-first Annual Report (1890), 399-401.
 Summary of Thirty-second Annual Report (1891), 401-410.
 Trustees of, urge claims of the Library upon public generosity, 413.
 Trustees of, ask public to increase present endowment of \$300,000 to \$1,000,000, 394.
 Trustees of, again appeal, in 1888, for additional endowment, 396.
 Twenty-fourth Annual Report by Trustees of, 386-389.
 Woman's School of Design, opened as a part of the Institute in 1859, 374.
 Women's Class in Phonography and Typewriting in 1883-1884, 391.
 Statistics of attendance on all schools of, for 1882-1883, 436.
 Utility of Art Instruction given in, set forth by Curator Zachos in eighteenth Annual Report (1871), 431-423.

Cooper Union Free Night School, Separate statements of Attendance for three years, 1884-1887, inclusive, 443.

Cooper Union Free Night School of Art, Statement of attendance, 1883-1884, 441.
Cooper Union Schools, Pressure for admission to, 384.
 Statistics of attendance of pupils for 1886-1887, 394.
Correlation of elementary studies, Importance of a right, 736.
Country, Is the assumed healthiness of the, as contrasted with the City, correct? 1070.
Cowen, Mr. John K., Delivered annual address at Commencement of Maryland Institute schools, June, 1889, 242.
Craig, Dr. John D., First President of Ohio Mechanics' Institute, 616.
Crawford, Lieut. Robert, U. S. N., Detailed by U. S. President Arthur, to take charge of Mechanical Handiwork School of the Spring Garden Institute, in 1882, 93.
Culture, The Meaning, and Perversion of, stated in address by Hon. Chauncey M. Depew, at opening of Drexel Institute, 567.
Curtis, Hon. George William, Letter from, regretting inability to attend opening of Drexel Institute, 577-578.
Cushing, Esq., Joseph M., Account of the complimentary dinner given to, by Board of Managers of Maryland Institute, 200-212.
Cushing, Joseph M., President Maryland Institute, Annual Report for 1887 by, 212-215.
 Commencement address by, 1887, 216-217.
 Commencement address by, June 5, 1888, 226-227.
 Presentation to, in 1887, 210.
 Report for 1886 by, 191.
 Stirring address by, in 1883, 174-176.
 Statement by, of needs of schools of Maryland Institute, 203-204.

D.

Daly, Chief Justice Charles P., Historical address by, at Centennial Banquet of General Society of Mechanics and Tradesmen of New York City, 301-304.
Davidson, Hon. Robert C., Mayor of Baltimore, Annual address at Commencement for 1890, of the "Maryland Institute" Schools by, 251-254.
Day, Hon. Timothy C., Reference to the "Day Will Trust Fund" given to the Ohio Mechanics' Institute by will of the late, 635.
Definitions, Importance of clear and distinctive, xxxi.
Della-Vos, Victor, Director of the Imperial Technical School in Moscow, 778.
Deems, Rev. Dr., Remarks by, at Arcadian Club reception to Peter Cooper (1874), 359-361.
Dement, Dr. Isaac S., Director of Department of Commerce, Armour Institute, 926.
Department of Mechanic Arts, Pratt Institute, Brooklyn, N. Y., Report of 1891, Classes in Science and Technology, 505-506.
 Day Trade Classes, 504.
 Evening Trade Classes, 505.
 Technical High School, 506.
Department of Manual Training and Art Education of the Horace Mann School, Teachers' College, New York City, Purpose and equipment of the, 1081.
Department of Music, Pratt Institute, 507.
Depew, LL. D., Hon. Chauncey M., Dedictory Address on opening of Drexel Institute, Philadelphia, December 17th, 1891, 566-572.
 "The Problem of Education and Liberty," stated in the address by, Drexel Institute, 567.
 Response by, at Centennial banquet of General Society of Mechanics and Tradesmen November 16th, 1885, 306-307.
Domestic Science, Departments of, Pratt Institute referred to, 525.

- Doulton, Mr.**, Illustrates how training in Art benefited one workman, 851.
- Doulton and Sparkes**, Result of the coöperation between, referred to, 851.
- Doultons**, Advances made by the, since the Centennial, 851.
- Drawing, Account of night classes of Spring Garden Institute**, Philadelphia, Pennsylvania, in, 107-120.
- A knowledge of, the fundamental basis of Mechanics and Art, xxxiii.
- As a science, 754.
- As a study in public schools, two classes of objections to, stated, 865-866.
- As taught in Cooper Union Night School, 444-445.
- Classes of New York Turnverein in, taught by practical artists, 340.
- Comments on the Exhibit of, at Vienna, by some American public schools, 900-901.
- Copies used by German and Austrian schools, 878.
- Detailed course of, in Technical High School of Pratt Institute, 512.
- Early provision for opening department of, in Pratt Institute, 454.
- Elementary, How to teach, as stated by Professor Langl, 871.
- Examination of teachers of, in France, 893.
- First taught in schools of Chicago, in September 1860, 721.
- Generally taught in Elementary Schools of California, 965.
- Government supervisor of, in French municipal schools, 893.
- How in France the Art element enters into the copies for teaching, 887.
- How taught in France in 1873, 888-890.
- Importance given to, in the schools of Cooper Union, 873.
- Importance of, in Bavaria Industrial Improvement Schools, 877.
- Importance of, revealed by World's Fairs, 867-868.
- In Chicago Evening High School, strictly Geometrical and Mechanical, 722.
- Influence of World's Fairs in changing French methods of teaching, 886.
- In Public Schools, Instruction in, urged by Maryland Institute committee, 146.
- Instruction in, essential for the skilled mechanic, 426.
- Introduced in schools of Columbus, Ohio, in 1874, 722.
- Introduction of, in schools of Austria, in 1850, 869.
- Methods of teaching, in Hamburg School, 883-884.
- Methods of teaching, in the industrial classes held by the Young Men's Christian Associations, 1029.
- Principles laid down for correct teaching of, 865.
- Recognized as a requisite study in Elementary Education, 779.
- The several classes in Free Night Schools of Cooper Union, 1887-88, 444-445.
- Spring Garden Institute, Philadelphia, Night classes in, interesting report in 1882 showing development of the, 110.
- Statements concerning French instruction in, 887.
- Urged as an essential study in all public schools, 165.
- Value of, to workmen, 739.
- Work of Boston schools in, commenced, 901.
- Drawing Class for Women**, in Cooper Union, closed; and a class in Phonography and typewriting opened; in 1885-86, 331.
- Drawing School of Franklin Institute**, Early statistics of, 56.
- History of, 56-70.
- Reorganization of, 57.
- Reports by Director Thorne of the, from 1882 to 1891, 59-70.
- Drawing Schools, Free Evening, of General Society of Mechanics and Tradesmen of the City of New York**, First opened winter of 1858-59, 326.
- Drawing Schools, Free Evening, of General Society of Mechanics and Tradesmen of the City of New York**, Extracts from By-Laws relating to, 326-327.
- First opened for girls in 1874, 326.
- Reports of school committee from 1882 to 1891, 327-337.
- Drexel, Anthony J.**, Early surmises concerning reported plans for an educational institution entertained by, 561.
- Drexel Institute Building**, A charming example of artistic architecture, 560-561.
- Brief descriptions of, 560-562.
- Completeness of the, 573.
- Concise statement in detail of the, 584-585.
- Contrasts favorably with those of Cooper Union and the Pratt Institute, 560-561.
- Dr. James MacAlister, directs arrangements and interior fitting up of, 560-562.
- Real palace of the people, 562.
- Shows artistic possibilities of brick and terra cotta, 560-561.
- Drexel Institute of Art, Science, and Industry, Philadelphia, Pennsylvania**, Accounts of the, 560-610.
- "An enterprise of noblest promises" writes George William Curtis, 578.
- Appointment, classification, and duties of the Advisory Board of Women of, 581.
- Appointment, organization, and duties of the Board of Trustees of, 580.
- Artistic home of the, 560.
- Announcement of the opening of the Art Department of, with details of the several courses, 592-595.
- Announcement of opening of the Business Department, 602-603.
- Announcement of the opening of the Scientific Department, with details of the courses, 595-598.
- Announcement of the opening of the Scientific Department of Mechanic Arts, 599-600.
- Announcement of opening of the Technical Department, with details of the courses, 600-602.
- Board of Managers to have all power over the Rules and Regulations governing the, 582.
- Business Department of, 588.
- Conditions of admission to the courses of instruction of, 590.
- Dedicatory address by Hon. Chauncey M. Depew, December 17, 1891, on opening of the, 566-572.
- Department of Domestic Economy, 586-587.
- Department of Mechanic Arts, 586.
- Department of Physical Culture, 603-604.
- Department of Physical Training, 588.
- Department of Science of, 566.
- Description of opening ceremonies in Philadelphia Ledger, 564.
- Description of ceremonies at opening of, in the New York Tribune, 563-564.
- Designated officers of Board of Trustees of, 580.
- Divisions in Art Department of, 586.
- Eloquent tribute to the character and methods of the Founder of, 573.
- Evening classes of, in Art, Manual Training, Domestic Industries, and Business Training, 589.
- Extracts from the Deed executed by Mr. and Mrs. Anthony J. Drexel to the Trustees of, 578-579.
- Extracts from The Rules and Regulations showing organization of Corporation and Faculty of, 579-584.
- Exquisite examples of modern Wood Carvings in museum of, 607-608.
- Faculty and employees of, appointed and retained at the discretion of the Board of Managers, 581.
- Founding of the, a notable exemplification of the Golden Rule, 572.
- General divisions of the, 585.
- In absence of Mr. Drexel, Mr. George W. Childs, receives guests on the opening of, 562.
- Interesting manuscripts, A Collection of, works of modern English, and American authors, given by Mr. George W. Childs, to Library of, 606.

Drexel Institute of Art, Science, and Industry, Philadelphia, Pennsylvania, Is a University of a new class, a People's University, 605.

The latest of its class, 6.

Library and Reading Room of, 589-590.

Library of, rich in illustrated Art works, 606.

List of invited guests present at the opening of, 564-566.

List of new instructors in Art Department of, 1892, 605.

List of Officials of, 1892-1893, 609-610.

Meetings of Board of Managers and order of business as given in the Rules and Regulations of, 582.

Message from Hon. James G. Blaine, "Congratulates Mr. Drexel, upon the wise object of the institution which his magnificent liberality has established," 578.

The Museum of, 590.

Names of trustees of, with Signatures to Deed of Gift, 578-579.

Noble Library and Reading Room of, 608.

A noble home provided for Industry, Literature, and Art, 574-575.

Normal Department of, for the Training of Teachers. Six courses planned for beginners in the, 588-599.

Number and mode of appointment of the Board of Managers of, 580.

Opening and dedication ceremonies of the, December 17th, 1891, 562.

Preliminary Circular of Information issued before the dedication of the building of the, 584-591.

Powers and duties of the President of, 580-581.

Proposed activities for 1892-1893, 604-605.

Provisions relating to Free Scholarships in, 591.

The purpose of the, stated by Chauncey M. Depew, 570.

Report of a visit to, by I. Edwards Clarke, in June, 1892, 604-608.

Riches of collections in Museum of, 607.

Scope and purpose of, concisely stated by President MacAlister, 575-576.

Statement of the committees of the Board of Managers of, as authorized by the Rules and Regulations, 582-584.

Superintendent James MacAlister, called in 1890, to the presidency of, 561.

Technical Department of, nine courses proposed in the, 587-588.

Touching memorial Art collection deposited in Museum of, 608.

Wide variety of educational training and opportunities offered by, 574-575.

E.

Eaton, Gen. John, United States Commissioner of Education. Results of inquiry into wage value of elementary training began in 1870-'71 by, 775.

École Communele, Paris. Concise account of the, 758.

École Municipal d'Apprentis, Paris. Concise history and account of the, 758-759.

École Nationale Des Arts Décoratifs, Paris. Account of the, 800-804.

Concours or competitions open to pupils of the, 802-804.

Detailed order of competitions, 803, 804.

Subjects taught in, 801-802.

Supervising Board and Faculty of the, 800-801.

École Professionale. Account of the, in printing establishment of MM. Chaix et Cie, Paris, 758.

Economic Statistics. Great importance that accurate, be obtained, 1068.

Kinds of, to be collected, 1068.

Education, Elementary, in England criticised, 753.

Elementary, in Germany and France criticised, 754.

Important report by Hon. J. W. Hoyt, on, 764.

Public, Private individuals unequal to the task of providing adequate facilities for, 384.

Education, Recent Rapid Development of, in the South, 1064.

The Community only, is adequate to provide facilities for free public, 384.

What manner of, is needed by Artisans, 753.

Why, in a Republic, schools should be free to all, 173.

Education Extension (monthly). Reference to the new periodical, founded in summer of 1895, 1013.

Educational Benefactions, Examples of wise, 449.

Educational Benefactors of to-day are worthy successors of the McDonoughs, Girards, and Peabodys, of the Past, xliii.

Educational Class Work in the Y. M. C. Associations, Reasons for, 1028.

"Educational Work in the Y. M. C. Association," Paper entitled, read by Mr. Cephas Brainerd, at Young Men's Christian Association convention in 1892, 1019-1027.

Educators, Comments and suggestions by, freely quoted, 2.

Elementary Art Training and Professional Art Schools necessarily different, xxii.

Elementary Schools and Technical Schools have wholly different aims, xxxi. Manual training in, 966.

Elementary Studies, What a knowledge of the, means to the child, xxxiii.

Elementary Technical Training, Need for, 755.

Emerson, Dr. Gouverneur, Named by Mr. Fraley, as the first in this country who delivered lecture courses on meteorology, 17.

Emerson, Ralph Waldo, Essay on Self-Reliance by, quoted, 707.

England, An Art-loving but not an artistic nation, 896.

Analysis of work of South Kensington pupils shown at Vienna by, 896-897.

Appreciation of Evening Schools genera in, 1048.

Art Industrial Education in, 858.

Art display of, at Vienna, mostly made up of articles from her Asiatic colonies, 896.

Concise statement of efforts undertaken to promote Art Knowledge and Art Industry in, 844.

Example of, in Industrial Art Training, followed by other countries in Europe, 850.

Industrial Art Schools of, commended by European Educational Authorities. (See note to pages 897, 898, 899.)

Lack of artistic training in, for two centuries, 168.

List of local Art Schools of, 898.

Recent growth of evening school work in, 1048.

Results of Educational Experiments in, 961.

Statement of the value to, of the Museum and Schools of South Kensington, by Herr Falke, 844.

Success of attempt to introduce Art training in, 169.

English Government, Appropriations by, for purchase of Art Objects for museums, 770.

Interest taken by, in promoting Industrial Art, 769.

English Language, Need of better training for their pupils in the use of the, recognized by Cooper Union authorities in 1873, 451.

Era of Electricity, The present may be called the, xlv.

Erie, Pennsylvania, Free Evening Drawing School of, 726-728.

School Board of, open Free Evening Drawing School in 1873, 726.

Erie Mechanical Drawing School, Report of, by City School Superintendent, 1891, 727-728.

Ernst & Korn, Art publications of, 880.

Kopy, Professor James P., Referred to by President Sellers, as an early teacher in the Franklin Institute School, 21.

Eitelberger, Professor Rudolph Von, Report on London Exhibition by, to the Emperor of Austria, in 1862, aroused public interest in Austria, 845.

Ethical Training, Importance of, in public schools, 741.

Europe, America can compete with the artistic workers of, only by extending Art instruction, 169.

Great activity in this nineteenth century in training Art workers by all the leading countries of, 169.

Mediaeval conditions of, 1063.

The great Catholic Abbeys in the early centuries of the Middle Age became great centers of Art instruction in, 167-168.

European Industrial Art Schools, Conclusions reached by Professor Carter, in his report on, 818-820.

European Industrial Art Schools in 1896, Paper concerning, by Professor Leslie W. Miller, Principal School of Industrial Art of Pennsylvania Museum, 1107-1116.

European Systems of Industrial Art Education, Concisely contrasted by Professor Leslie W. Miller, 1111.

Evening Art School of Columbus, Ohio, Reasons for giving up the public, 725.

Evening High School of Chicago, Account of the, by Mr. H. H. Belfield, 721-722. Closed by the great fire in 1871, reopened in 1874, 721.

Mr. Selim H. Peabody, first teacher of, in 1868, 721.

Opened by City Board of Education, in September, 1884, 721.

Evening School Work in Europe, Compared with Y. M. C. A. evening schools in the United States, 1047-1051.

Evening Schools of General Society of Mechanics and Tradesmen of the City of New York, Statistics of attendance on the, 336-337.

Exhibits by Young Men's Christian Associations, Account of, 1036.

Exhibitions, International, Influence of, in elevating the Art qualities of English manufactures, 825-826.

Influence of, as records of Art Industry. Report by Professor Archer, on the, 825-830.

Expenses of Cooper Union School (1883-1884), 391.

Exposition, The Cincinnati Centennial, Efforts to give brilliancy to, by sending commissioners to visit the European Expositions, 622.

List of officers of, 622-623.

Exposition, Vienna Universal, Brief summary of contents of papers relating to the, 824. Papers relating to the, 823-901.

Expositions, Long series of annual, begun by Franklin Institute, in Philadelphia, in 1824, 620.

National Museums enriched from the Collections shown in Universal, 823.

F.

Falke, Herr Jacob, Programme relating to Industrial Art Museums prepared by, Acting head of Vienna Museum, 841-842.

Assistant Director of Vienna Museum, writes of the value to England of the South Kensington Museums and Schools, 844.

Farrar, Dean, Statement by, considered, 1067-1068.

Fayerweather, Daniel B., Executors and Trustees of estate of, give endowment fund of \$200,000 to Women's Art School of Cooper Union, 410.

Fehrenbach, Hon. John, Extracts from address by, on closing of first year of the Technical School of Cincinnati, 687-689.

Felton, Eloquent statement by the late President, of Harvard College, on the American doctrine of the rights of the people, 172.

Figure Drawing, Real purpose of, 871.

Fisher, Hon. William A., Address by, at Commencement of Maryland Institute Schools in 1884, 182.

Fitzgerald, Hon. James, Address by, on the Centennial anniversary of Peter Cooper's birth, referred to, 410.

Fletcher, Mr. Calvin, A liberal founder of the Ohio Mechanics' Institute, 616.

Fletcher, Mr. Thomas, Presided at meeting which led to founding of the Franklin Institute, Philadelphia, 9.

Foote, Mr. John P., A liberal founder of the Ohio Mechanics' Institute, 616.

President of Ohio Mechanics' Institute from 1828 to 1847, chosen in 1857 as one of the Board of Emeritus Trustees, 614.

"The Founders of the Maryland Institute", A toast given at the complimentary dinner to President Cushing, and responded to by John M. Carter, Esq., 210-211.

Foye, Ph. D., L. L. D., James C., Director in the Department of Chemistry, Armour Institute, Chicago, Ill., 918.

Fraley, Hon. Frederick, Extracts from letter by, 9.

Historical address, in 1874, by, referred to, 9. Quotations from the Commemorative address in 1874, concerning the Franklin Institute, by, 16-17.

France, Abundant opportunities for Art training of workmen in, 892-893.

Art Industrial education in, 859.

Attention called by German Government to excellence and importance of the Industrial Art Training in, 879.

Condition of popular education in, in 1873, 888-889.

Evolution in methods of teaching Drawing in, 886.

Four typical Technical Schools in, described, 756-760.

How Drawing is taught in, 888-889.

Importance of drawing to the industries of, 885.

Prussia, at close of French War, made haste to follow in Industrial Art Training, the example of, 859-860.

Reasons for the artistic superiority of the art products of, stated by Mr. William Sartain, the well-known artist of New York City, 455.

Statistics of illiteracy in, in 1870 (note to page), 889.

Value to, of Governmental encouragement of Art, 894.

Franklin, Benjamin, Career recalled by that of Peter Cooper, 350.

Franklin Institute, of Philadelphia, Pennsylvania, Account of the, 9-70.

Account of first meetings to found the, 10.

Account of the journal of the, 27-28.

Address by President Sellers, on the fiftieth anniversary of the, 21-25.

Address of Board of Managers relative to proposed exhibition in commemoration of fiftieth anniversary of the, 29-30.

Begun in 1824, a long series of expositions (see note to page), 620.

Brief account of the, 26-27.

Brilliant address by President Henry Morton, of Stevens Institute of Technology, on fiftieth anniversary of the, 18-21.

Brilliant record of membership of the, 53.

The building of the, described, 50-51.

Charter and By-Laws, 12-16.

Claims of the, upon the public, set forth by President Sellers, in 1874, 25.

Collections of, 27.

Commemorative address by Mr. Fraley, concerning the, 16-17.

Department of Instruction of the, Names of distinguished professors connected with, 17. Direct and indirect influence of the, on the city of Philadelphia, and on the country, 52-53.

Drawing School of, History of, 56-70.

Drawing School opened at same time as Institute, 56.

Educational features of the, 51.

Educational work of the, 16.

Exhibition of 1874, by the, Report of committee on, 31-33.

Franklin Institute of Philadelphia, Pennsylvania. First professors appointed in the, 10.
 Founded in 1824, 9.
 History of the Exhibition of 1874, 31-40.
 History of the International Electrical Exhibition of 1884, held by the, 40-50.
 Lists of Presidents and Secretaries of the, since the founding of the Society, 53-54.
 List of officers and committees for 1891, 55.
 Membership of the, 52.
 Names of Founders, 9.
 Names of committee in charge of fiftieth anniversary celebration of the. (See note to page 25.)
 Names of officers and managers of the, for 1884, 49-50.
 Names of committee on reorganization in 1887, 28.
 Names of first promoters, see note to page 10.
 Opening of an English High School by the, 17.
 Opening of technical drawing school by the, 17.
 Original Features which characterize the, 22.
 Origin of the, 9.
 Plan of founding, indorsed in letter by Nicholas Biddle, Esq., 10.
 Programme of anniversary exercises, 1874 (note to pages 25 and 26).
 Proposed reorganization of the, 1887, 28.
 Public Exhibitions held by the, since 1824, 28.
 Purposes and history of the, summarized in Ledger article, 11.
 Reference to (see note to page), 620.
 Statistics of Membership and Finances for 1890, 54-55.
 Winter courses of Lectures under auspices of the, 26.
Free Evening Art School, Columbus, Ohio. Course of instruction in, 724-725.
 City Superintendent of Schools, Mr. Stevenson, recommends permanent establishment of the, 724.
 Mr. Goodnough, recites some of the difficulties of the, 724.
 Illustrations of practical value of the, 723.
Free Evening Drawing Classes in Chicago, Ill., Columbus, Ohio, and Erie, N. Y., 720-728.
Free Evening Drawing Classes as substitutes for the teaching of industrial art drawing in public schools, 720-721.
Free Evening Drawing School of Erie, Pennsylvania. Continued from 1873 to 1884, when the Mechanical Day and Evening Drawing School was opened, 726.
 Opened by City School Board in October, 1873, 728.
Free Evening Drawing Schools. Reference to, by Mr. W. S. Goodnough, Superintendent of Drawing in schools of Columbus, Ohio, 725.
Free Night School of Science and Art, of Cooper Union, New York City. Account of the, 416-447.
 Conditions for graduation from the, 424.
 Divided into the Scientific and Art Departments, 423.
 Increase of full course to five years announced by Trustees in Seventh Annual Report (1886), 422.
 Instruction largely given by lectures when first opened, 418.
 List of classes organized at opening of the, 418-419.
 Preliminary statement concerning, 416-418.
 [1861] Problems of attendance discussed by Trustees in Second Annual Report of, 421.
 Programme of three years' course of study, 421-422.
Free Night School of Art, Cooper Union, Statistics of attendance on the (1880-1881), 435.
 Statistics of attendance on the (1881-1882), 436.
 Statistics of attendance on the (1882-1883), 437.
Freiburg Mining School. Brief reference to the, 784.

Free School Society of New York City. Peter Cooper, becomes a member of board of the, in 1838, 409.
 De Witt Clinton, head of board of, for twenty-five years, 409.
 Builds first schoolhouses in 1809, 409.
French, Professor Thomas, of Cincinnati. Urges the further development of industrial training in public schools, 692.
Fry, Henry L., of Cincinnati. Art influence of, shown by the wood carving of his pupils at the Centennial Exposition, 711.
 The wood carving of, praised, 711.
Freebel Academy. Purchase of, by Pratt Institute, 495.
 Name of the Kindergarten established by Pratt Institute, 489.
Fuchs, Professor Otto. Formerly with Massachusetts Normal Art School in Boston, succeeds Professor Nowell, as head master of Maryland Institute Art Schools, in 1884, 176.
 First report by, as head master Art Schools of Maryland Institute (June 3, 1884), 179-182.
 First report by, as principal of Maryland Institute Night Schools of Design, 283-284.
 Extracts from Second Annual Report by, 1885, 186-188.
 Report for 1886 by, 191-196.
 Report of Art Schools, for 1886-1887, 218-219.
 Report of the Maryland Institute, by, June 5, 1888, 227-230.
 Report by, for 1888-1889, 245-246.
 Report by, for 1889-1890, 248-251.
 Report by, for 1890-1891, 264-266.
 Reference to, as Art Director of Maryland Institute, Baltimore, 455.
 Response by, at Dinner to President Cushing, 269.
Furniture. England and Austria made at Vienna the best showing of, 838-839.

G.

Garrard, Mr. Jephtha. Presents to the Ohio Mechanics' Institute the valuable apparatus used by Dr. Craig, 617.
General Industrial School of Hamburg Described, 882-884.
General Introduction to Appendices, 731-733.
General Society of Mechanics and Tradesmen of the City of New York. Account of celebration of Centennial Anniversary of, Nov. 16 and 17, 1885, 298-318.
 Authorized to establish a school and an apprentices' Library, in 1841, 294.
 Educational powers of, increased, 294.
 Growth of, 294.
 Library, interesting results of making it Free, 319.
 List of invited guests and description of the Centennial Banquet, with extracts from the address, 299-312.
 List of officials for 1891, 325.
 Manual of, containing Charter, By-Laws, etc., 319.
 Membership, condition of, 294.
 Officers of, 295.
 One Hundredth Annual Report (Dec. 31, 1885) of the, 318-319.
 Origin of the, 294.
 Resources of, 319.
 School changes in 1858 from elementary English to Drawing Schools, 295.
 Summary of history of, from 1775 to 1891, 294-325.
 Women's class in Phonography and Typewriting, first opened in 1886, 392.
George, Henry. Doctrines of, should be tested by accurate statistics, 1071.
 Reference to "Progress and Poverty" by, 1067-1068.
Germany. Art Industrial Education in, 859.
 Concise review of nineteenth century Art in, 875.
 List of names of local museums in, 874.
 Secular general aesthetic training in, 875.

- Ginn, Robert**, How men of wealth advance Civilization, shown by, 1071.
- Gilman, L. L. D., President Daniel C.**, Address by, at annual Commencement of Maryland Institute Schools referred to, 182. Address by, in 1884, on "Handicraft", issued as Monograph No. 1, by Industrial Education Association, New York, 182. The ideal Librarian depicted by, 1024.
- Gilmer, Mr.**, One of the earliest Art Collections in the United States made by, of Baltimore, 236.
- Gilpin, Mr. Thomas, President of Ohio Mechanics' Institute**, Commends the Industrial and Art School of the Institute in his report of April, 1888, 663. Tribute to the late, 630-632.
- Giris**, Facilities given to industrial training of, in Pratt Institute, 454. Industrial Education of, in some European countries. Paper on, by Miss Jessie Paterson, 1117-1119. Value of Manual Training to, 704.
- Goodaugh, Professor W. S., Superintendent of Art Education in City Schools of Columbus, Ohio**, First Master of Evening Art School, 723. Reports by, 724-725. Introduction of Catalogue of Brooklyn School Art Exhibition by, 1054-1065.
- Graham, Esq., George**, At that time the only living charter member of Ohio Mechanics' Institute, furnished in 1880, the historical sketch for this Report. See note to page 616. A liberal founder of the Ohio Mechanics' Institute, 816.
- Grand Medal of Cooper Union**, Conditions of competition for the, 424.
- Great Britain**, Great increase in incomes of all classes between 1850 and 1881 in, 1069. Local centers of Art Education in, 859. Statistics of attendance on local Art Schools of, 859. Three powerful Institutions for promoting Education in, briefly described, 1050-1051.
- Green, Mrs. Amy**, Gift of Art models and books to Cooper Union by the Misses Hewitt, and, 400.
- Greenwood, Miles**, Chosen President, in 1848, of the Ohio Mechanics' Institute, 618. Tribute to the late, 627. Trustee in 1854, makes large donation toward freeing the Institute from debt, 614.
- Greenwood and Allen, Messrs.**, Honored by election in 1856, as a Board of Emeritus Trustees and Advisory Directors of Ohio Mechanics' Institute, 614.
- Grimshaw, Dr. Robert**, Credited with plan of the Technical School of Mechanic Arts of Spring Garden Institute, 121.
- Grozmann, Maximilian P. E.**, Superintendent of Workingman's School, New York City, Paper on Manual Training work of boys and girls, by, 1097-1098.
- Gunsaulus, D. D., Rev. F. W.**, Called to the Presidency of Armour Institute, Chicago, Illinois, 911-912.

H.

- Hamburg**, Excellence of instruction in Drawing in schools of, 882. Exhibits at Vienna made by Industrial Schools of, 884. Industrial Schools at (see note by Mr. Stetson, to page 835). Liberal appropriation by City to Industrial Schools of, 885. Purpose and methods of the General Industrial School of, 882-884.
- Hand Work**, Mr. Atkinson, on advantage of, 791. Remarks concerning, by Mr. Charles Pratt, 478-479.
- Harrie, Hon. J. Morrison**, Maryland Institute, Commencement address by (1885), 188.

- Harris, L. L. D., Hon. Wm. T.**, Introduction to two Statistical papers by, 1061-1064. On "The Readjustment of Vocations," 746-747. Two recent statistical papers by, 1061-1071.
- Hatch, Sc. D., Frank C.**, Director Department of Mechanical Engineering, Armour Institute, 915.
- Haupt, Professor L. M.**, Resigns position as Director of Franklin Institute Drawing School, in 1878, 57.
- Hawley, U. S. S., Hon. Joseph R.**, Response by, at Centennial banquet of General Society of Mechanics and Tradesmen, 304-305.
- Hebrew Industrial Schools in Philadelphia and New York**, 341.
- Hebrew Technical Institute, New York City**, Account of the, 341-347. Enthusiastic meeting held April 22, 1888, in support of the, 342. Courses of instruction in, 344-346. Exhibition of pupils' work in 1887, 342. First opened in January, 1884, 341. Historical statement of the, 341. Lists of Board of Directors and Instructors, 347. List of Speakers at meeting in support of, 342. New shop building of, opened February 1, 1887, 342.
- Heich, Mr. John B., Clerk of Ohio Mechanics' Institute**, Final report by, (1885-1887), 600-603. First principal of School of Design of Ohio Mechanics' Institute, 637. Prepares historical sketch of the Institute from 1853 to 1878, 613. Quoted from addresses by Mr. Minifie, 638. Report by, for 1858 quoted, 639. Report by, for 1881-1882, 645-648. Report for 1883-1884 by, 656-657. Report for 1884-1885, 658-659. Report for 1885-1886, 659-660. Resignation of, in 1887, as Principal of the School of Ohio Mechanics' Institute, after thirty-one years' continuous service, 660. Resignation of, as clerk of the Ohio Mechanics' Institute, 627-628. Tribute to, by Committee of Ohio Mechanics' Institute, 627-628.
- Hervey, President**, Comments by, on Superintendent Carroll's address on Manual Training in Elementary Schools, 1095-1098.
- Hessia**, Exhibits made by Artisans' and Improvement Schools of, 881-882.
- Hewitt, Hon. Abram S.**, Reminiscences by, told at Centennial Banquet of General Society of Mechanics and Tradesmen, 308-309.
- Hewitt, Mrs. Sarah A.**, Daughter of Peter Cooper, unites with her brother, Edward Cooper, in defraying cost of reconstructing the Cooper Union building, 393.
- Hewitt, the Misses**, Gift of art models and books to Cooper Union by, 400.
- Hill, Hamilton A.**, Selections from Report by, Commissioner from Massachusetts to Vienna Exposition, 837-841.
- Hinton, Louis J.**, "The Higher Education of Mechanics for their Trades" by, 761. Quotation from Report of, on Vienna Exposition, 802. Selections from Report of, Artisan Commissioner of Massachusetts, 841. Summary of suggestions for general art training by, 765.
- Hodge, Mr. George B., Secretary International Committee of Young Men's Christian Associations in New York City**, Industrial Education by, Papers on, quoted, 1014-1019. Reference to, 1013.
- Hodge, George B., Secretary Educational Department of Y. M. C. A. of North America**, Paper on European evening school work in contrast with that of Y. M. C. A. in the U. S. by, 1047-1051.
- Hodges, Mayor James**, Response to toast of City of Baltimore by, 204-205.

- Hodges, Mayor James**, Extracts from Maryland Institute Commencement Addresses in 1886 by, 194-197.
- Hoffman, Ex-Governor John T.**, Response by, at centennial banquet of General Society of Mechanics and Tradesmen, 305-306.
- Hogg, Mr. Quintin**, The founder of the London Polytechnic, 1040.
- Horace Mann School, Teachers' College, New York City**, Aim and Scope of the, 1079.
- The school of observation and practice attached to the Teachers' College, 1079-1085.
- Concise outline of courses in the Department of Manual Training and Art Education of the, 1085.
- Department of Manual Training and Art Education of the, Conspectus of courses of study for the three years in the, 1081-1085.
- Department of Domestic Science and Art of, summary of courses in the, 1080.
- Department of Manual Training and Art Education of, List of Directors of the, 1080-1081.
- List of instructors in the Department of Domestic Science and Art of the, 1080.
- Hosca, Mr. L. M.**, Annual address in 1880 by, for the Board of Trustees of Ohio Mechanics' Institute, 643-644.
- Heyt, Hon. J. W. U. S. Commissioner to Paris Exposition**, Important statistical statement by, 764.
- Statement by, on importance of prompt adoption of drawing in American schools, 862.
- Humanity**, List of names of noble workers for, xli.

I.

- Imperial Technical School in Moscow, Russia**, Account of the, 778-781.
- The administration of the, 779.
- Method of instruction in the, 780.
- Professor Victor Della Vos, Director of the, 779.
- School workshops of the, 780-781.
- India**, Example of Art industries of, 767.
- Pupils' work shown at Vienna by Art Schools of, 897.
- Indian Collections of South Kensington**, Illustrates cooperation by eminent museum authorities, 766-767.
- Industrial Advantages of Country Children**, 1018.
- Industrial Art**, Book by Dr. H. Schwabe in 1866, comprising English and German efforts to advance, 876.
- Interest taken by English Government in promotion of, 769.
- Must be taught in accord with laws of Pedagogy, 864.
- Need for Schools and Museums of, 826.
- Origin of modern, 167.
- Present need for elementary training in knowledge of, xlv.
- Industrial Art Education**, Art features of, recognized by first Boston promoters, xxix-xxx.
- European Methods of, 800.
- Movement for, Active in all Europe, 861.
- Reasons for, 863-864.
- Industrial Art Museum**, Need of an, in Baltimore, 160.
- Industrial Art Museums**, Important influence of, in promoting taste and skill, 842.
- Lessons for organization of, urged by Maryland Institute committee, 147-149.
- Purpose and methods of, 842-843.
- Industrial and Art School of Ohio Mechanics' Institute**, Report of the, for 1886-1887, 660-663.
- Industrial Art Schools**, Great need for, in the United States, 819.
- Industrial Art Training** in Elementary Schools, designed to lead to High Art Academies, just as classical elementary training fitted for Colleges, xxx.
- Limitation of possible extent of, in elementary Public Schools, xxxli.

- Industrial Art Training**, North and South Germany confere in regard to, 878.
- Plans of early promoters of, never completed, xxx.
- Professor Carter, suggests a Society for Promotion of, 819-820.
- Value of, to Austria, 849.
- Industrial Conflict**, The Age of, between Nations begun, 858.
- Industrial Design**, Relation of, to manufactures, 790-791.
- Industrial Education**, An aid to Mental Discipline, 1017.
- City Children in Special need of, 1018.
- Series of Papers, in "Education Extension" on, by Mr. George B. Hodge, quoted from, 1014-1019.
- Industrial Life**, New System of, 569.
- Industrial Training**, An English experiment in, 1017.
- Industrial and Technical Education** must take their relative positions in the curriculum of the schools, xxix.
- Industrial Technical Work in Y. M. C. A.**, Educational classes in, 1027.
- Outlines of courses in educational class work, 1030-1032.
- Industries**, Value of Art applied to, 747.
- Institution de St. Nicholas, Paris**, Concise account of the, 756-757.
- Successes of boys taught in the, 757.
- Variety of trades taught in the, 757.
- Institutions of Education**, Value to any local community, of the addition to its society of the cultured members of the Faculty of the, 935.
- Interesting Biographical letter**, from the late Charles Pratt, 450-451.
- Introduction to Part III**, xxi-lii.
- Table of contents of, lii-iv, xxii-xxiv.
- Inventions**, How New Mechanical, modify educational needs, as well as Industries, xlv.
- Iron Workers**, Technical School for, in Steyer, Austria, 786.
- Italy**, Art Industries of to-day in, differ from those of the Middle Ages in the absence of Great contemporary Art, 895.
- Conditions of Industrial Art training in, 894-895.
- Lithographic and photographic reproductions of the Art Treasures of, 895.
- Most branches of Art Industry originated in, 894.
- Technical skill of natives of, an inheritance, 894.
- The whole country of, is a Museum of Art, 894.

J.

- Jacob Tome Institute, Port Deposit, Maryland**, Account of the, 933-955.
- The Building and Endowment of, 935-936.
- Classes of children first provided for by the founder of, 935.
- Comprises full school system of a town, including Kindergarten and High School, 936.
- Courses in Manual Training, 946-953.
- Course in Music, 953-955.
- Courses in Form Study, Drawing, and Color, 950-953.
- Description of the building, 936-937.
- Equipment of Departments of the, 938, 939.
- Extracts from catalogue of the, for 1895-96, 931-955.
- The Founder of the, 933-934.
- General view of science courses, 945-946.
- Grammar School course, 943.
- High School course, 944.
- How this differs in its surroundings from similarly endowed schools, 955.
- Interest taken by Mrs. Tome, in the, referred to, 935.
- List of Officers and Instructors, 955.
- Modeled after the Horace Mann School attached to the Teachers' College, New York City, 936.
- Outlines of courses of study, in various departments of, 939-955.

Jacob Tome Institute, Port Deposit, Maryland—Continued.

Outline of Kindergarten course, 940-941.
Preliminary words to account of, 933-935.
Primary school course, 942.
Purpose of, 937.
Reference to, as an interesting "Educational Experiment," 935.

Jacques, Herbert R., The cost of Manual Training by, Report concerning, 1103-1105.**James, Superintendent H. S., of Eric, Pennsylvania,** Reports by, on the Mechanical Drawing School for 1884 and for 1886, 726-727.**Jarvis, M. D., Edward.** Paper on "Value of common school education to common labor" by, referred to, 775.

Value of paper by, in support of new methods of Elementary Industrial Training, 776.

Johnson, Hon. Bradley T., Maryland Institute Commencement address by, 1882, 163-169.**K.****Keating, Professor,** cooperated with Mr. Merrick, in founding Franklin Institute, 10.**Keyes, A. B., Charles H.** Address on "Manual Training" by, President of the "Throop Polytechnic Institute," Pasadena, California, 958-965.**Kindergarten,** Established by Mrs. Philip D. Armour, Chicago, Illinois, 909-910.
Established by Pratt Institute, Brooklyn, N. Y., 489.**Kindergarten Methods,** President Charles M. Pratt, refers to the value of, 489.**Klemm, Ph. D., Professor L. R.,** Appointed principal of Technical School of Cincinnati, July, 1888, 711.

Extracts from first report by, 712-714.

Resigns as principal of Technical School of Cincinnati, June, 1889, 716.

Specialist in U. S. Bureau of Education in 1889, 716.

Knears, Mr. Wm. H., Suggestions by, led Mr. Merrick to initiate the movement for organizing the Franklin Institute, 9.**Knott, Esq., A. Leo,** Maryland Institute, Commencement Address by, 1882, 167-169.**Knowledge,** The want of, the greatest want of the world, 425.**Komotau School,** Concise statement of courses and methods of instruction in the, 785.

The model for Austrian Mechanical Schools, 786.

Practical advantages of, to pupils, 786-787.

Purpose of, 785.

Reason for Professor Rumkle's special interest in, 785.

Tribute to practical value of the, by Austrian Department of Commerce, 786.

Why methods of, are superior to those of a manufacturing shop, 788.

Professor Ordway, indorses the methods of, 788.

Kunou, Mr. Charles A., Director of Sloyd Instruction in Throop Polytechnic Institute, 987.**L.****Laidlaw, Mr. Walter,** Chairman of committee on Industrial and Art School of Ohio Mechanics' Institute, visits European Schools in 1889, 671.**Langl, Professor,** Introduction by, to Austrian Official Report, 867-869.**Latrobe, Hon. Ferdinand C.,** Commencement address (1887) by, on the "Importance of modern Technological Schools," 220-223.
Address by, referred to, 205.

History of Maryland Institute given in address by, 136-139.

Refers to the City Manual Training School and to the Technological School begun by Baltimore and Ohio Railroad Company, 221.

Report by, as President of Maryland Institute, for 1883-1884, 177-179.

Latrobe, Hon. John H. B., Characterizes his associate founders of the Maryland Institute, 137-138.

Initiates movement for founding the Maryland Institute in 1825, 137.

Referred to, 155.

Tribute to, by John Prentiss Poe, 266.

"Learning and Working," Book by Frederick Denison Maurice entitled, commended, 1027.**Ledger, of Philadelphia, The Public,** Account of exhibitions in 1888, of pupils' work in night classes of Spring Garden Institute, given in, referred to, 117.**Legend of "The Blacksmith and King Solomon,"** 306.**Leipsic, Art Industrial Museum of,** 874.**Leipzig, Ph. D., H. M., Director Heinrich Technical School,** Letter from, 343.**Lemonnier, Madame,** The pioneer of the movement for Industrial Education of Girls in France, 1117.**Library,** A boy's first book from a Public, 308.
Valuable suggestions for use of a, in public schools, 543-545.**Library and Reading Room,** Free public, opened by Pratt Institute, 452.**Library Management,** Classes for instruction in, 544-545.**Library of Cooper Union,** First opened Sunday, October 6, 1872, 379.

Trustees, in 1891, urge claims of, upon the public, 413.

Library of Ohio Mechanics' Institute, Containing 7,000 volumes, was combined with the Common School Library, and the public reading room opened, in 1886, and so the Free Library of the City began, 614.**Library of Pratt Institute,** Brooklyn, N. Y., 543-545.

Astral Branch of, 485.

Report and statistics of, for 1890-1891, 597-598.

Statistics of Circulating, for 1889-1890, 484.

Use made of, 483-484.

Lick, Mr. James, The Founder of the California School of Mechanical Arts. Reference to, 991.**Life,** Increase in Great Britain of average duration of, spite of great increase of city populations, 1070.**Lincoln, Abraham, President,** Influence of the Emancipation Proclamation by, xi.**Lisbon, Portugal,** Industrial Museum in, 828.**List of Y. M. C. Associations** having educational classes, 1036-1037.

Of Authors on the new education quoted by Dr. Klemm, in his first report as Principal of Technical School of Cincinnati, 714.

Of Board of School Trustees of New York Turnverein, for 1892, 340.

Of Centennial Committee of General Society of Mechanics and Tradesmen, 318.

Of Officials of General Society of Mechanics and Tradesmen for 1883, 295.

Of Officials of General Society of Mechanics and Tradesmen of the City of New York for 1891, 325.

Of School Committee of General Society of Mechanics and Tradesmen of the City of New York for 1891, 337.

Of first Board of Trustees of Cooper Union Institute, 376.

Of first graduates of Cooper Union Night School, 377.

Of Cooper Union Art Lectures, 1887-1888, 397.

Of distinguished speakers on occasion of Arcadian Club reception, 357-358.

Of first Trustees of Cooper Union, 365.

Of Instructors in Cooper Union Night School of Art, 447.

Of first Instructors of Cooper Union Night Schools as given in First Annual Report (see note, page 373), 418-419.

Of first Instructors in Schools of Cooper Union, 376.

Of Instructors and number of pupils in regular courses of Pratt Institute, 1888, 470.

- List of Instructors and number of pupils in the Mechanical Arts Department of Pratt Institute, 1888, 469.**
- Of Lectures in Cooper Union for 1886-1887, 395.**
- Of Officers of Arcadian Club, of New York City, for 1874, 355.**
- Of persons present at Arcadian Club reception to Peter Cooper, 361-362.**
- Of Officers and Instructors of Cooper Union, 1877-1878, 383.**
- Of Officers and Trustees of Cooper Union for 1883, 391.**
- Of Board of Managers and Committees of Maryland Institute (1879-1880), 152.**
- Of Board of Managers of Maryland Institute in 1887, 201.**
- Of Committees and Instructors in charge of Maryland Institute Night Schools of Design, 1883-1884, 279.**
- Of Committees and Instructors in charge of Maryland Institute Night Schools of Design, 1884-1885, 284.**
- Of Committees and Instructors in charge of Maryland Institute Night Schools of Art and Design, 1885-1886, 286.**
- Of Committees and Instructors in charge of Maryland Institute Night Schools of Art and Design, 1886-1887, 287.**
- Of distinguished speakers and friends of Maryland Institute, 138-139.**
- Of Officials of Maryland Institute for 1883-1884, 176.**
- Of Officials of Maryland Institute for 1888-1889, 241-242.**
- Of Officials of Maryland Institute for 1891-1892, 271-272.**
- Of Committees in charge of Maryland Institute Schools, 1891-1892, 290.**
- Of Instructors in charge of Night School of Maryland Institute for 1888-1889, 289.**
- Of Instructors in the Maryland Institute Schools of Art and Design for 1889-1890, 289-290.**
- Of Instructors in Maryland Institute of Night Schools for 1890-1891, 290.**
- Of speakers and topics at complimentary dinner given to President Cushing by Board of Managers of Maryland Institute, 201.**
- Of Subscribers to Fund of the Technical School of Cincinnati, 715-716.**
- Of Trustees and Faculty of Technical School of Cincinnati for 1891-1892, 719.**
- Literature, "The Enduring" and "The Transitory" in, characterized, xi-xli.**
- Influence of success on the, of a movement, xi.**
- Present Report seeks to preserve the Literary records of the movement it records, xli-xlii.**
- Locke, Dr., An early teacher of the Ohio Mechanics' Institute, 617.**
- London Polytechnic, The four characteristic features of the, described, 1040-1042.**
- Founded by Mr. Quintin Hogg, 1040.**
- Movements resulting in the, had origin in a ragged school opened in 1855, 1040.**
- London Times, Notice in, of work of Mr. Casper Purdon Clarke, in collecting Art products of India, 766-767.**
- Low, Hon. Seth, President of Columbia College, Delivers address on Centennial anniversary of Peter Cooper's birth, 401-410.**
- Lowell School of Design, Boston, Mass., Liberal gifts of Looms to the, 791.**
- McCahann, Mr. George L., Actuary Maryland Institute, Board of Managers express appreciation of, 225.**
- Macy, Mrs. Josiah, founds the Macy Manual Arts Building of Teacher's College, New York City, in memory of her late husband, 1077.**
- Macy Manual Training High School, Course of Study in the, 1086.**
- Departments of Instruction in the, 1087-1088.**
- List of Instructors in the, 1090.**
- Location, Buildings, and Equipment of the, 1086-1087.**
- Manual Training for Boys, 1088-1089.**
- Manual Training for Girls, 1089-1090.**
- MacVeagh, L.L. D., Hon. Wayne, Address by, on presenting, for Mr. Drexel, the deeds of gifts to the Trustees of Drexel Institute, 572-575.**
- Speaking for Mr. Drexel, expresses his deep regret at the sad cause of the absence of the giver of this noble gift, 572.**
- Mahan, Josephine, East Orange, N. J., Paper on Chip Carving by, 1102-1103.**
- Mail, New York Evening, Report of Arcadian Club reception to Peter Cooper, in the, 361-362.**
- Manchester, England, Loan Art collection for Schools in, referred to, 1053-1057.**
- Manual Element in Education, A paper on the, by Prof. John D. Runkle, L.L. D., 748-750.**
- Manual Skill, Importance to all workers of, 1018.**
- Manual Training Aids Laboratory Science Work, 964.**
- Conference on, Account of a, 1092-1106.**
- Courses of study in Secondary Schools, 960.**
- Defined, 965-906.**
- Dignities all labor, 963.**
- Exhibit by Berkeley School pupils in New York City. Reference to the, 1074.**
- Four advantages of, 707.**
- General movement in favor of, xxviii.**
- Given in a three years' course in the Technical High School of Pratt Institute, 534-536.**
- Gives insight into many occupations, 962.**
- Ideal Teachers of, described, 967-968.**
- The idea of, as expounded by Hon. Chauncey M. Depew, 570-571.**
- Introduction to paper on, in Appendix W, 1073.**
- Moral value of, 964.**
- Names of Committee on, for California Teachers, 968.**
- Paper XI in Appendix W on recent progress of, in the United States, 1073-1106.**
- Professor Norton, urges value of, in promoting longer duration of school life, 691.**
- Programme of, for Elementary Schools, 966.**
- Reference to recent paper on, by Professor Woodward, in Education Report for 1893-1894, 1073.**
- Statistics in Report of U. S. Commissioner of Education for 1893-1894, Reference to, 1106.**
- Synopsis of report of Committee of California Teachers, Jan. 1, 1896, on, 965-968.**
- Value of elementary, 778.**
- Why Part II was given to account of the movement for, xxvii-xxix.**
- Manual Training and Art, Superintendent Carroll, on, xxxvi.**
- "Manual Training and the Course of Study," Title of paper read by Superintendent Carroll, at Buffalo, 1891, xxxiv.**
- Manual Training Conference in 1897, Reference to, 1108.**
- Manual Training in Elementary Schools, by Superintendent C. F. Carroll, of Worcester, Mass., 1092-1095.**
- Manual Training Schools, Pres. Public, Professor Norton, urges that the city should establish, 691.**
- Manual Work for Boys, Detailed course of, in Technical High School of Pratt Institute, 513.**
- Manual Work for Girls, Detailed course of, in Technical High School of Pratt Institute, 513-514.**
- Manufactures versus Agriculture, 1070.**

M.

- Manufactures**, Industrial Design as applied to, 790-791.
- Marx, Karl**, Statement by, criticised, 1067.
- Statistics bearing on supposed law enumerated by, and blindly accepted by others, 1068-1069.
- Maryland Institute**, Abstract of Annual Report, 1880, 151-152.
- Abstract of new charter of the, 1878, 140-143.
- Abstract of report by President Latrobe, for 1883-1884, 177-179.
- Address by Hon. S. Teackle Wallis, at Commencement of (1881), 155-161.
- Addresses at the 1882 Commencement of schools of, 183-189.
- Annual addresses (1883) at Commencement of schools of, 173-176.
- Addresses delivered at complimentary dinner given to President Joseph M. Cushing, March 14th, 1887, by Board of Managers of the, 200.
- Annual address Commencement of 1888, delivered by Col. I. Edwards Clarke, 220-240.
- Annual Commencement Addresses June 5th, 1888, 226-241.
- An Industrial Art Museum begun in 1891, 263.
- Annual address, Commencement of 1890, delivered by Hon. Robert C. Davidson, mayor of city, 251-254.
- Annual Report of Board of Managers, for 1889-1890, signed by President Cushing, 246-248.
- The annual exhibition of the, referred to, 170.
- Annual Report of, for 1884-1885, 183-184.
- Announcement of increase in City appropriation to, 212.
- American Schools of Art and Design, Brief account of some, 261-262.
- Art Schools, Statistics of attendance for 1886-1887, 219.
- Building destroyed by fire in 1835, 138.
- Change in its activities due to founding of other institutions, 139.
- Closed by destruction of building and loss of all properties in 1835, 138.
- Commencement address by Hon. Bradley T. Johnson, 1882, 163-167.
- Commencement addresses and reports, June, 1887, 216-223.
- Constitution and By-Laws of, 134-136.
- Corner-stone of new building laid March 13th, 1851, 138.
- Development of the schools of, 245.
- Development of the School of Art and Design, main purpose of the, in recent years, 139.
- Difficulties of, when Mr. Cushing was chosen in 1885, stated by Chairman Skillman, 202.
- Direct value to the community of the work of the, 270.
- Drawing School in 1848, 273.
- Educational work of, 267.
- Educational work of the Institute eloquently stated by Mr. Poe, 269-270.
- Efforts of managers of, cordially supported by the Press of Baltimore, 180.
- Exhibition of pupils of, in 1884, 182.
- First exhibition of, held in 1826, 138.
- Fortieth Annual Report (1888) of Board of Managers, 224-226.
- Forty-first Annual Report (1889) of Board of Managers of, signed by Joseph M. Cushing, President, 243-244.
- Forty-second Annual Report by Board of Managers, 246-248.
- Forty-third Annual Report (1891) by Board of Managers, 256-258.
- Great improvements made in building of, in 1879, 143.
- Growth of Schools of Art and Design of, 170.
- Historical address concerning, by Hon. Ferdinand C. Latrobe, 136-139.
- Historical Reminiscences of, 207.
- Historical Summary of its development, by John M. Carter, Esq., 210-211.
- Mr. Hugh Newell retires from the position of Instructor of the Art School of the, at close of season of 1883-1884, 176.
- Maryland Institute**, Improvement in methods and courses of the schools of, 184.
- Increasing attention given to the Art Schools of the, 162.
- In 1890 a committee of managers of, go on tour of inspection of Art Schools in other cities, 254.
- Increasing prosperity and activities recorded for the year 1890-1891, 254.
- Interesting list of names of distinguished people connected with the, 138-139.
- Latrobe, Hon. Ferdinand C., credits the first attempt in Baltimore to give technical training to the schools of the, 220.
- Library of, 140.
- List of names of first officers of, 137.
- List of officials (1870-1880), 152.
- List of officials of, for 1883-1884, 170.
- List of officials of, for 1888-1889, 241-242.
- List of officials for 1891-1892, 271-272.
- Memorial to Legislature by, 149-150.
- Movement for, begun by Hon. John H. B. Latrobe in 1825, 137.
- Official recognition of, by Board of Managers of, loss by the death, in 1891, of three leading members, 256.
- Organization of Industrial Art Museums, urged by Committee of, 147-149.
- Pamphlet issued by managers of, in 1886, 190.
- Peabody Library supplies for Art students, lack of Art books in Library of, 140.
- Personal description of several of the Founders of the, by their associate, Hon. John H. B. Latrobe, 137.
- Premiums for Scholars of, founded by the late George Peabody, first announced in 1878, 149.
- President Gilman's address at Commencement of schools of, in 1884, referred to, 182.
- Professor Fuchs sent to Europe by managers of, on a tour of observation of European Art and Technical Schools in summer of 1891, 255.
- Purposes of Founders of, 134-135.
- Recital by President Cushing, in 1888, of gifts to the, 226-227.
- Relation borne by the, to the Community, 231.
- Reorganized, 1847-1848, 138.
- Report by Committee on Museum of Art and Design, 263.
- Report of Special Committee, 262.
- Report of 1878 by Board of Managers, signed John M. Carter, President, 140-143.
- Report of special visiting Committee of, on the art schools of this Country, 144-149.
- Report of President Joseph M. Cushing, for 1886, 191.
- Schools of, for 1886, 191-196.
- Schools, Reorganization of, in 1879, 276.
- Schools of the, Statistics of attendance on drawing for the school years from 1875 to 1879, 275-276.
- Night Schools of Design of the, Requests to, by George Peabody and John Hopkins, 275.
- Night Schools of Design, Concise history of the, 273-280.
- Night Schools of Design, Course of Instruction in the, (1875-1876), 275.
- Night Schools of Design, extracts from Annual Reports giving Statistics of, 277-279.
- Night Schools of Design, Important results due to enforced regularity of attendance of pupils of, 279.
- Night Schools of Design, New course of Instruction for, announced for 1879-1880, 276-277.
- Night Schools of Design, Programme of courses in, from official circular for 1883-1884, 280-283.
- Schools of, Statistics of attendance on, are referred to, 223.
- Statement about schools of, by President Cushing, 203-204.
- Statistics of attendance in schools of, for 1888-1889, 243-244.
- Schools of, Statistics of, for 1887-1888, 224.
- Statistics of attendance in schools of, for 1887-1888, 230.

- Maryland Institute**, Professor Fuche's annual report concerning schools of (1888), 227-230.
- Statistics of attendance in schools of, for 1890-1891, 257-258.
- Statistics of attendance in schools of, for 1890-1891, 266.
- Statistics of, for 1882-1883, 170.
- Statistics of schools of, for 1889-1890, 247-248.
- Stirring Address by Joseph M. Cushing, Esq., at 1883 Commencement of the school of the, 174-176.
- Hon. S. Teackle Wallis, delivered address at laying corner stone of the new building, 138.
- Thirty-ninth Annual Report (1887) of the Maryland Institute, statistics of school attendance for 1886-1887, 213.
- Value to amateur pupils of association with the graded pupils in the Art classes of the, 217.
- William Stuart, first President of, 137.
- Massachusetts**, Drawings shown in Vienna by Schools of, commended, 901.
- Mathematics**, Need of better training in, in Public Night Schools, 427.
- Maurice, Frederick Denison**, Lectures by, referred to, 1027.
- Mechanic Art Schools**, Rise of a class of Trained Teachers for the, 782.
- In Austria, Practical value of the, 782.
- Mechanic Arts**, Buildings of Pratt Institute given to the Department of, 468.
- Department of, in Pratt Institute, 468.
- Department of Pratt Institute, List of Instructors and statistics of attendance in the, in 1888, 469.
- Mechanical Drawing**, Day and Evening School of, Erie, Pennsylvania, Supersedes the Free Evening Drawing School, 727.
- Mechanical Drawing School of Erie, Pennsylvania**, Courses of study in the, for 1891, 727-728.
- Mechanical Handiwork**, Night classes in, Spring Garden Institute, Account of the, 120-127.
- Schools of, Report beginning in 1879, of the Spring Garden Institute, 120-121.
- Mechanic Institutes** and Similar Institutes, Accounts given of various, in Part III, 731.
- Account of such Associations in the city of Philadelphia, Pennsylvania, 7-129.
- Evolution of classes and Schools of, xxxii.
- Noble purpose of Early Founders of, xliii.
- Origin of, in Great Britain, 21.
- Merritt, Samuel C.**, Called the meeting which led to founding Franklin Institute, 9.
- Merrill, B. S., Mr. George A.**, Letter from, Principal California School of Mechanical Arts, 989.
- "Message of Art to Modern Men,"** subject of address by I. Edwards Clarke, at the Commencement of the Schools of the Maryland Institute in 1888, 230-240.
- Metal Work**, Fine showing at Vienna of English and French Art in, 838.
- Metzner, Mr. H., Principal of School of the New York Thruverein**, Extracts from letters of, 339-340.
- Miller, Professor L. W.**, Successor of, in Philadelphia, referred to, 455.
- Paper by, on Industrial Art Education in Europe, 1167-1116.
- Millet, Professor Louis J.**, Director Department of Architecture, Armour Institute, 920.
- Millett, Mr. F. D.**, Report by, Special Commissioner of Massachusetts to Vienna Exposition, 852-854.
- Minifie, Mr. William**, the late, of the Maryland Institute, Baltimore. Reference to, 638.
- For the years 1852-1854, Principal of the School of Design, Maryland Institute (see note to page 273.)
- Reference to published lectures of, 134.
- Mitchell, Vance & Co.**, Thanks of Trustees of Cooper Union to, for gifts of bronzes as prizes for the Industrial Art pupils, 430.
- Moore, Mr. Henry**, Secretary School committee of General Society of Mechanics and Tradesmen of the City of New York, Letter from, recording changes in school courses in 1888-1889, 332.
- Morris, William**, Illustrates by his words and acts the value of Art to man, 237-239.
- Morton, President Henry, of Stevens Institute of Technology**, Brilliant address by, on Fiftieth Anniversary of the Franklin Institute, 18-21.
- Mount Clare**, Technological School founded by Baltimore and Ohio Railroad, 221.
- Museum of Art and Industry**, Concise account of the Austrian, 871-873.
- Artistic publications of the Austrian, shown at Vienna, 873.
- Departments of instruction in the Austrian, 872.
- Providence and methods of the Austrian, 872-873.
- Purpose of a, to develop Art Industry, 872.
- Museum of Industrial Art** needed in Baltimore, 160.
- Museum Technical, Pratt Institute**, Condition in 1891-1892 of the, 542.
- Museums**, Educational, Relation of English Government to, 768-770.
- Local Industrial Art, in Great Britain, 767-770.
- Practical utility of Public Art, 762.
- Striking instance of their value to one workman, 762-763.
- Reference to some European Industrial and Polytechnic, 828-829.
- Museums of Industrial Art**, Influence of, 843.
- Programme relating to, 842.
- Purpose and methods of, 842-843.
- Value of, stated by Herr Jacob Falke, of Vienna Museum, 842.
- Museums and Schools of Art and Industry** are the art masters of the people, 845.
- Music**, Department of, for Pratt Institute, 540-541.

N.

- National Educational Association**, See reference to Journal of 1892 meeting of the, xxvi.
- National Educational Association in Buffalo in 1895**, Two papers read before the, xxxiii-xxxiv.
- Nature**, That the phenomena of, are the results of matter in motion, was the theme of President Morton's address, 13-21.
- New Conditions of Civilization**, Dangers attending, 568.
- New Education**, Opportunities opened to women by the, 571.
- Newell, Professor Hugh**, Called from "Pittsburg School of Design for Women" to take charge of Maryland Institute Art Schools in 1879, 143.
- Retires from the head of Maryland Institute Art School, 1884, 176.
- Successor Professor Woodward in charge of Maryland Institute Schools, 277.
- Newell, Professor M. A., State Superintendent of Education**, Address to graduates of Maryland Institute Commercial School by, 189.
- Maryland Institute Commencement address by (1888), 240-241.
- Response by, 208-209.
- The late, of Maryland, referred to, 516.
- Newman, Cardinal**, On the true foundation of Education. (Note to 1921.)
- Newspapers**, No great free Nation possible without, 1067.
- Value of, as an Educational Force, 1067.
- New York City**, Total lack during early life of Peter Cooper, of any educational opportunities for working classes in, 426.
- Population of, when Peter Cooper was born, 402.
- New York Tribune**, Description of Drexel Institute, by the correspondent of the, 563-564.

Olson, Mr. John E., Secretary school committee General Society of Mechanics and Tradesmen of the City of New York, Letter from, 336-337.

at Art Classes of Cooper Union, Rapid growth of, noted in 1873, 431.

at Schools of Cooper Union, For details of, see index under "Cooper Union," Roles, Regulations, and Studies in (1882-1883), 437-440.

at Schools of Design of Maryland Institute, Account of the, 273-290.

at Schools of Spring Garden Institute, Exhibitions of pupils' work in, 117.

mal School of the Arts of Design, Saint Josse-Ten-Noode, Brussels, Account of the, 804-805.

Brussels, Methods of instruction in the, 804-805.

Brussels, Divisions of the, 804.

ris, Mr. W. H., Succeeded Mr. Church, as Superintendent of the Spring Garden Institute Schools in 1887, Mr. Church, resigning to enter the Baldwin Locomotive Works, 97.

ton, Professor Thomas, Extracts from address by, at the first Commencement of the Technical School, of Cincinnati, 689.

Table by, showing rapid diminution of attendance of pupils in public schools, 690.

omburg, Bavarian Industrial Museum at, 874.

O.

Occupations, Analytic List of Lower and Higher, 1070-1071.

Tendency ever to develop higher and higher, considered, 1070.

en, John M., First President of the Spring Garden Institute, 71.

Death of, recorded, 88.

o Mechanics' Institute, Cincinnati, Ohio, Account of, 611-631.

Account of Exhibitions by, 618-625.

Account of Centennial Exhibition held by, in 1888, 620-626.

Annual volume of "Reports of Proceedings", Publication of an, begun January, 1882, 615.

Attendance on School of Technology of the, for 1882-1883, 653.

Board of Emeritus Trustees and Advisory Directors chosen in December, 1856, 614.

Committee of, appointed in 1880 to consider the opening of a School of Technology, 644.

Condition of School of Design of the, in 1878, the Fiftieth anniversary of Institute, 640.

Corner Stone of new building for the, laid July 4th, 1848, 618.

Course of Scientific Lectures opened in connection with School of Technology in the autumn of, 1882, 649.

Day Trust Fund of, given by Will of the late Hon. Timothy C. Day, of Cincinnati, 635.

Decrease of pupils in School of Design of, in 1881-82, 639.

Department of Industrial Improvements organized in, 1878, 615.

Exhibition of, 1870, 620-621.

First Exhibition of, held in 1838, 620.

Extracts from Sixtieth Annual Report (1888) of, 620-623.

Extracts from Sixty-first Annual Report (1889) of, 623-625.

Extracts from report of the school, for 1888-1889, by Superintendent Champion, 669-670.

Financial Report of, for 1890-1891, 636.

First Exhibition held by the, May, 1838, 618.

First home of, secured by liberality of three members, 616.

Founded in, 1828, 616.

Gen. Solomon Van Rensselaer, who commanded Fort Washington, attends exposition of the, in 1840, 618.

Historical Sketch of, furnished for this Report by George Graham, Esq., of Cincinnati, 616-618.

Influence of the School of Design of, in stimulating teaching in drawing in public schools, 640.

Ohio Mechanics' Institute, Cincinnati, Ohio, Mr. Jephtha Garrard, presents to, the valuable illustrative apparatus used by Dr. Craig, in his lectures on Natural Philosophy, 617.

Dr. John D. Craig, first President of the, 618. List of Successful Exhibitions held by the, 618. Department of Science and Art of the, organized in 1880, 615.

Extract from Charter of the, 613.

Extracts from Historical sketch printed in, 1853, 612-613.

Fifty-fourth Report of Board of Directors, (1882), 641-645.

Final report of School of the, by Principal Heich, after thirty-one years of service, 660-663.

First report of the Industrial and Art School of the, made by the new Superintendent, Mr. R. E. Champion, in 1888, 663-669.

Freed from debt Aug. 1, 1856, 614.

Historical record of lists of officers of the, in the Fiftieth Anniversary volume referred to, 615.

How first fund was raised, 616.

Important Report concerning the Industrial and Art School of the, made by Superintendent Champion, for the year 1890-1891, 672-680.

Industrial and Art School of, graded in three departments, 655.

Industrial Departments in Art School of, in 1891, 673-675.

Industrial and Art School of the, Report on, for session of 1883-1884, 656-657.

Industrial and Art School of the, Report on, for session of 1884-1885, 658-659.

Movement to organize the, begun in 1828 by John D. Craig, 612.

Library of, comprising 7,000 volumes combined with the Common School Library in 1856, and so the free public Library of the city begun, 614.

List of Officers of, for 1890-1891, 637.

Names of Charter Members of, 613.

New building of, begun in 1848, 618.

Officers of, for 1892, 681.

Public Exhibitions of, a popular feature, suspended during the War of the Rebellion, 614.

Prosperity of, in 1892, 680-681.

Purpose of Founders of, 616.

Reference to Industrial Expositions of, since 1870, 653.

Report by President James Allison, in 1891, 633-635.

Report of special committee on Technological Education, 649-652.

Reports by Board of Trade and Institute Committee on Technical School, 650-652.

School of, reorganized and renamed as the "Industrial and Art School," in 1883-1884, 655.

School of Design of the, organized in 1856, 614.

School of Design of, double number of pupils in second year, 638.

School of Design of, opened in 1856, 637.

School of Design, Committee's Instructions to Teachers 1881-1882, 646-647.

School of Design of the, Report by Principal of the, for 1881-1882, 645-648.

School of Technology of, Opening year of the, 1882-1883, 648.

Sixtieth Annual Report by the Board of Managers of the, 628-629.

Sixty-first Annual Report of, 629-630.

Sixty-second Annual Report (1890) of, 630-632.

Six years' expenses and receipts of the School of the, 669.

Statement of Annual Attendance on the School of, for Thirty-five years, 673.

Summary of educational work of the, 625-626.

Summary of attendance on the Industrial and Art School of the, for 1888-1889, 630.

Table of Contents of Chapter VI, Containing Account of the, 611-612.

Table showing various occupations of pupils attending the Industrial and Art School of the, in 1890-1891, 674-675.

- Ohio Mechanics' Institute, Cincinnati, Ohio,** Tribute to their late President Mr. Thomas Gilpin, 631-632.
 Sixty-third Annual Report of the (1891), 633-637.
 Unites with the Chamber of Commerce and the Board of Trade in a grand exposition in 1870, 618.
 A visitor describes the School of the, in 1888, 664-665.
- Old Age,** President Andrew D. White, comments on Cicero's treatise on, 359.
- Owen, Mr. Philip Cunliffe,** Credit given to Admirable Services of, in connection with Reports on Vienna Exposition of 1873, 830.

P.

- Packer, Asa,** The College he founded at Bethlehem, Pennsylvania, will perpetuate the memory of, 572.
- Palmer, Miss Roselinda H.,** First girl graduate of School of Cooper Union, wins Grad Medal in 1866, 424.
- Parsons, Esq., John E.,** Gift by, to library of Cooper Union, 401.
- Paris,** The city apprentice school of, referred to, 164.
 Drawing in schools of, 890-891.
 Exhibits at Vienna, by Art Schools of, 891-892.
 What, does for Art, 890.
- Part II,** Summary of arrangement of contents of, xxxvi.
- Part III,** Appendixes to, begin with Appendix R, 732.
 Contains histories of Mechanic Institutes, 731.
 Report on Art and Industry. Chapter I, Analytical Table of contents of, 1.
- Part IV** of this Report contains account of Technical Schools, 731.
- Past,** Contrast between present common comforts and the general discomforts of the, 1062.
- Patterson, Miss Jessie,** Paper on Industrial Training of Girls in France, Switzerland, Germany, and England by, 1116-1117.
- Peabody, Mr. Selim H.,** First teacher of Chicago Evening High School, 721.
- Peaslee, Dr. John B.,** Ex-Superintendent of Cincinnati Public Schools, Extracts from address by, 692-693.
 Commends the Technical School of Cincinnati, 693.
- Pedagogic** value of an elementary study essentially different from the money producing value of technical training, xxxi.
- Perkins, Esq., Charles C.,** Reference to the late, xxvii and 516.
- Perry, Mr. Walter S.,** Early called to Pratt Institute, from Worcester, Massachusetts, 448.
 Drawing Department of Pratt Institute opened in October, 1887, in charge of, 456.
 Letter of, referred to, 486.
 Power for good in the hands of, 455.
 Remarks by, on presenting a memorial bust in bronze of the Founder of Pratt Institute, 493-494.
 Statement of, concerning the adornment of the halls of Pratt Institute by, Principal Art Department, 516.
- Pfefferkorn, Mr. Otto W. G.,** Director Department of Music, Armour Institute, 927.
- Philbrick, L. L. D., Hon. John D.,** Reference to the late, xxvii.
- Philadelphia Ledger,** Description of ceremonies at opening of Drexel Institute in the, 564-565.
 Report of addresses delivered on occasion of opening the Drexel Institute in the, of December 18, 1891, 566-577.
- Philadelphia, Pennsylvania,** History of Schools of Spring Garden Institute, 107.
 History of Spring Garden Institute, 107.
 The oldest and the youngest of these Industrial Educational schools are each in the city of, 6.
 Technical educational facilities of, pointed out by ex-Mayor Latrobe, of Baltimore, 223.
- Philanthropists,** Purpose of, in founding institutions for Industrial Training, 455.
- Phonography and Typewriting,** Class for women in, first opened by Cooper Union in 1883-1884, 391.
- Physicist Exercise,** Hygienic value of, to girls, 708.
- Pistor, M. E., Mr. Philip,** Takes charge of Franklin Institute Drawing School in 1878, 57.
 Resigns charge of Franklin Institute Drawing School in 1880, 58.
- Plan** of present. Report on "Art and Industry," 2.
 Of present volume, Statement of, xxv.
- Plympton, Mr. George W.,** appointed Director of Night School of Cooper Union, gives in the Twenty-first Annual Report (1880) Statistics of attendance in the School of Art, 434.
 Report of Night School of Cooper Union for 1883-1884 by, 440-441.
 Report for 1887-1888, 443-444.
 Report for 1888-1889, 445-446.
 Report for 1889-1890, 446.
 Report for 1890-1891, 446-447.
 Statistics of Cooper Union Free Night School of Art for 1881-1882, 436.
 Statistics of Cooper Union Free Night School of Art for 1882-1883, 437.
- Poe, Hon. John Prentiss,** Address by, Commencement Maryland Institute Schools 1891, 266-271.
- Polytechnic Christian Institute,** of London, Concise account of the first, by Secretary Hodge, 1049-1050.
- Polytechnic Christian Institutes,** Increase of, in past thirteen years, 1050.
 Concise Analysis of Methods and Success of the, 1050.
- Polytechnic School,** Originally planned as a part of Cooper Union Institute, 374-375.
- Porcelains,** Magnificent display of English, at Vienna, 838.
- Port Deposit, Maryland,** Description of, 933-934.
- Porter, Gen. Horace,** Response by, at centennial banquet, General Society of Mechanics and Tradesmen, 308.
- Porter, Professor William A.,** in charge of the Art Schools of the Spring Garden Institute, 97.
- Potter, Bishop,** of New York, begins with prayer the opening ceremonies of Drexel Institute, 566.
- Potter,** Chemistry has given new life to the Art of the, 854.
 Progress and vitality of the Art of the, 854.
 Rapid development of the Art of the, 854.
- Prang Educational Company** cooperates with the authorities of Pratt Institute, 491, and 548-554.
 Value of its elementary art training recognized by educators, 490.
- Pratt, Charles,** of Brooklyn, N. Y., Death of, May 4th, 1891, 486.
 Letter from, to the editor of this Report, 450-451.
 Mr. Brainerd, in paper read before Y. M. C. A. convention, pays hearty tribute to the late, 1020.
 The bronze memorial bust of the late, paid for by the voluntary gifts of pupils and teachers, 494.
 The children of, take up his work, 486.
 The family of, heartily cooperate in the work of the Institute, 486-489.
 The late, Tribute to, by his son, 487-488.
 Presentation of memorial of the late, 493-495.
 Presentation of a bronze bust of the late, 487.
 Reference to Peter Cooper, and George Peabody, in letter of, 451.
 Rumor of the intention of, to found an Educational Institution, 448.
- Pratt, Charles M.,** Address by, President of Pratt Institute, on Founder's Day, October 2, 1891, 487-493.
 Letter of, to Mr. Perry, accepting for the Trustees the memorial bust, and expressing their appreciation of the gift, 494.

- Pratt, Mr. Frederic B.**, Secretary of Pratt Institute, Extracts from paper on the Educational work of the Y. M. C. Association by, 1037-1039.
- Report of, for year ending June 19th, 1891, 495-497.
- Pratt Institute**, Brooklyn, N. Y., Abstract of Act of Incorporation of, 451-452.
- Address by President of, on Founder's Day, October 2d, 1891, 487-493.
- Applied Design in Art Department of, 523.
- Architectural and Mechanical Drawing in Art Department of, 520-523.
- Arrangement of classes in Art Department of, 517-518.
- Art Department of, Object of, 516-517.
- Art Department of, Official statement of, for 1890-1891, 516-525.
- Art Needlework in Art Department of, 524-525.
- Art Department of, Opportunity given for studying the development of the, 515-525.
- Art Department of, Report for 1890-1891 of the, 497-502.
- Astral Branch of, Library of, 485.
- Astral Branch Library, 545.
- Mr. Brainerd pays tribute to Founder of, 1020.
- Buildings of the, 457-458.
- Bust of the late Charles Pratt, presented to the Trustees of, on "Founder's Day," 1891, 494.
- Catalogue of, for 1891-1892 described, 509.
- Classes in Library Training, 544-545.
- Clay modeling in Art Department of, 521.
- Conditions of admission to, 554-555.
- Courses in Cooking, 526-528.
- Courses in Dressmaking, 531-532.
- Courses in Household Economy, 528-530.
- Courses in Hygiene and Home Nursing, 529.
- Courses in Sewing, 530-531.
- Courses of study in School of Art and Design of, 462-463.
- Courses in Millinery, 532-534.
- Department of Agriculture of, referred to, 548.
- The Department of Building Trades of, includes Trade Apprentices Schools, 454.
- Department of Building Trades of, Description of, 470-471.
- Department of Commerce referred to, 503-504.
- Department of Domestic Science, 464-467, 503.
- Department of Mechanic Arts, 468, 504-507, 534-540.
- The Department of Mechanic Arts of, combines the work of both the Manual Training School and Night Schools, 454.
- Department of Drawing, first opened with only twelve pupils, 456.
- Department of Music, 507.
- Descriptive illustrated article concerning, in Scientific American of October 6th, 1888, 448.
- Development of the Art Department of, in 1890, 481-482.
- Educational Departments of, 461.
- Encouraging news of the rapid development of the, 491-492.
- Enters into an alliance with Prang Educational Company of Boston, 548-554.
- Extract from catalogue of, for 1891-1892, 509-559.
- Evening Classes in Science and Technology, 538-540.
- Features of public interest connected with, 458-459.
- First public financial statement by, in 1891, 493.
- First opened to pupils, in October, 1887, 456.
- Formal opening of the, in autumn of 1887, 448.
- Free Library, Reading Room, and Art Galleries, to be opened to the public by, 452.
- General statistics of, for 1890-1891, 497.
- Halls of, hung with Art photographs by Mr. Perry, Principal of Art Department, 518.
- Illustrated descriptive pamphlet issued in 1888, 448.
- In the several Departments opened to the public the, serves the Community, as well as by its Schools, 454.
- Incorporated by New York Legislature early in 1887, 448.
- Introduction to account of, 496.
- Interesting features of its growth, 496.
- Pratt Institute**, Interesting table showing circulation of different classes of works in Library of, 508-509.
- Lecture courses of, 461.
- Letter from the founder of, 450-451.
- Library of, 543-545.
- Library and Reading Room, 459.
- List of Instructors and Statistic of attendance, 1888, 467.
- List of Officers and Instructors for 1890-1891, 557-559.
- Manual Training, a course of three years in, 534-536.
- Musio Department of, 540-541.
- New buildings of, in 1892, 509.
- New educational problems of, 488.
- Normal Art course in Art Department of, 520.
- Official programme of courses in, 526-534.
- Over a thousand pupils and thirty teachers in attendance in various departments of, October 1888, 456.
- Organization of, stated, 509-570.
- Owing to delays in completion of building only thirty-six pupils attended at close of 1887, 456.
- Photographs of the world's Art works, adorn the Halls and Stairways of, 516.
- Possibilities of, in direction of Art Training, 456.
- Powers and purpose of the Corporation of, as given in Act of Incorporation, 451-452.
- Practically a series of Trade Schools for Women, 525.
- Provides, in the "Department of Domestic Science," similar facilities for girls, as the other departments give to boys, 454.
- Purchase of Froebel Academy by, 495.
- Purpose of, concisely stated, 457.
- Purposes of Mr. Pratt, in the founding of, 450.
- Reading Room of, Report for 1890-1891, 508-509.
- Reasons for retaining this account of the early opening of, 471.
- Regular Art courses in Art Department of, 518-520.
- Regular three years' courses of instruction for boys and for girls, 469-470.
- Reports by Departments of, for 1890-1891, 497-509.
- Report for the fourth year ending June 19th, 1891, 495-509.
- Report of Library of, for 1890-1891, 507-508.
- Resemblance of, noted to Pennsylvania Museum and School of Industrial Art, 455.
- Resources of, 458.
- School of Art and Design, 461-464.
- Secretary's Report for 1890-1891, 495-497.
- Serves the Community at large by its Public Reading Room, Lecture Courses, and Museum.
- Shorthand Department of, 467-468.
- Similarity of, to Cooper Union, and difference between them, noted, 453.
- Summary of Report of the Secretary for the year 1889-1890, 480-482.
- Technical High School of, Extract from report of, for 1890-1891, 497.
- Technical Museum of, 460, 542.
- Technical School Department of, with a three years' course for both sexes, 570-575.
- "The Thrift" of, a novel feature, 545-548.
- Trade School statistics 1888, 471.
- Trade School course of, 536-538.
- Trustees of, authorized to exercise full discretion as to methods and plans, just as the Trustees of Smith College, in Northampton, Mass., are wisely empowered to do, 453.
- Tuition fees of, 556-557.
- Use made of Library of, 483-484.
- Wood Carving in Art Department of, 523-524.
- Premises, Mistaken**, of some Philanthropic and Agrarian Agitators, 1069.
- Present Volume**, Author's responsibility for form of the, stated, xlv.
- Summary of contents of Appendices to, xlviii-lil.
- Summary of contents of chapters of the, xlv-xlvii.
- Private Collection**, of Mrs. W. C., Private collection of Ceramics, owned by, Reference to the, 856.

Progress, How varied industries promote, 1066.
Prussia, Industrial Art Training in, shown at Vienna Exposition, by the admirable series of Art Examples and Illustrations, used by students of, 879.

Few competent teachers of drawing in Schools of, 878.

Industrial Schools of, reorganized in 1870, 879.

Public, Need of artistic knowledge by the, 855.
Public Education, Can only be secured by action of the Community, 392.

How the Pratt Institute, and like typical undertakings, serve the interests of, 488.

Public Interests, How good citizens everywhere seek to promote, 1064.

Public Schools, Absence of elementary technical training in, deplored by President Sellers, in 1874, 23.

Defects in courses of study in, 740.

The demands on, for methods of education adapted to the new era, stated by President Sellers, in 1874, 24.

Drawing in, Influence of, 642.

Elements of knowledge taught in the, xxxii.

Importance of Ethical Training in, 741.

Importance of Industrial Training in, 747.

In Philadelphia, Improvement of, soon caused closing of the English High School opened by Franklin Institute, 17.

Industrial Training in, a necessity, 748-750.

Instances referred to of the happy use of Art photographs and casts in the, of various cities, 516.

Interaction between these voluntary educational associations and the, 4.

Limitations of the elementary, xxxii.

Need of Manual Training in, 1018.

Singular view of the, expressed by Mr. Bonaparte, 171.

Suggestion of two plans for giving Industrial Training in the, 750.

Purpose and Plan of this Volume, "Part III." of the "Art and Industry Report," briefly stated, xxi, xxiv-xxv, and 411.

R.

Race Education in the South, Statistics of, 1064.

Raymond, Mr. R. W., Reports by, on Lecture Course of Cooper Union for 1886-1887, 395.

Readjustment of Vocations, Value of Industrial Training in application to the, 746-747.

Register, Mr. Samuel W., President, Thirty-fifth Annual Report of Maryland Institute, 1883, signed by, 169-170.

Regular three years' Courses of Instruction in Pratt Institute, list of instructors and number of pupils in 1888, 463-470.

Reid, Mr. Whitelaw, Response by, at the Centennial Banquet of the General Society of Mechanics and Tradesmen, 309-312.

Reut and Income of labor, Relative increase of, since 1850, contrasted, 1071.

Report, Concise Statement of first four volumes of this, xxv.

On "Art and Industry." Sources of information availed of for this, 2.

On "Art and Industry." Summary of plan and methods of this, 2.

Ninety-eighth annual, General Society of Mechanics and Tradesmen (1884), Extract from, 295-296.

Resolution of approval of this, by N. E. A. in 1892, xxvi.

Unity of plan of this, 731.

Reports by British Commissioners to Vienna, Extracts from, 825-834.

Republic, Why free public schools are essential in a, 173.

Reuter, Professor Theodore, Director of Royal Mechanic Art School, Komotau, Bohemia, 781.

Rhinehart, William H., Sculptor, Anecdote concerning, 157.

Memorial collection in Peabody Institute, Baltimore, of works by, 157.

Richards, Charles R., Pratt Institute, Brooklyn, N. Y., Paper on "Manual Training for second four years in school" by, 1101-1102.

Rich Men, True fame gained by a few, 572.

Roberts, Marshall O., Anecdotes of, 408.

Robinson, Col. Wm. L., President Board of Directors of Technical School of Cincinnati, Address by, June, 1888, 705.

Rogers, John H., President General Society of Mechanics and Tradesmen. Inaugural Address by (1884), 295-296.

Rogers, Dr. Robert E., Summary of the Scientific work of The Franklin Institute by, 18.

Ronaldson, Mr. James, Presides at large called meeting in Philadelphia, 10.

Royal Mechanic Art School, in Komotau, Bohemia, 781-782.

Professor Theodore Reuter, director of the, 781. Programme of two years' course of study and shop work in the, 781.

Royal School for Art Industry, Munich, Account of the, 805-812.

Course for teachers of drawing in the, 812.

Courses of preliminary and special instruction in the, 806.

The, is directly under authority of Ministry of Interior, 806.

Programmes of studies in the, 808-810.

Founding of the, in 1850, by the Society of Industrial Arts, 805.

Study plan of Female Department of the, 811-812.

Study plan of Male Department of the, 807-808.

Royal School of Industrial Arts, Nuremberg, Account of the, 812-817.

Arrangement of classes and hours in the, 814-815.

Departments of the, 812-813.

Branches taught in various Departments of the, 813.

Means and methods and subjects of Instruction in the, 815-817.

Runkle, Professor John D., Advise American students in Mechanic Arts, to take their undergraduate course in an American polytechnic school, 784.

Commends example of Austria, to people of the United States, 786.

Discusses the European Technical Schools, 783.

Interested to find that the school of Komotau, like that of Boston, followed the example of Director Della Voss, of Moscow, 785.

On the creation in Europe, of a class of Trained Teachers of Mechanic Art Schools, 782.

Paper by, on the Manual Element in Education, 776-778.

Paper on need for Industrial Training in Public Schools by the late, 748-750.

Ruskin, John, Reference to, 237.

Russin, Ancient Art of, 828.

Elementary Technical Training in, 778-781.

Museum of Rural Economy opened in, 827-828.

Professor T. C. Archer, refers to recent Industrial Art Schools of, 861.

Rutter, Mr. Robert, President General Society of Mechanics and Tradesmen of the City of New York. Inaugural address by (January, 1889), 320-323.

S.

St. Denis, The Abbey of, in Paris in the 12th century, a great center of Training in Art Industries, 168.

St. Mark's Workingmen's Club and Institute, Philadelphia, Pa. Account of, 127-129.

Sartain, Mr. William, artist, Reasons given by, for the Artistic Superiority of French goods, 455.

Sartain, Miss Emily, Success of Woman's School of Design in Philadelphia, in charge of, referred to, 455.

Saxony, Drawing a compulsory study in elementary schools of, 881.

- Saxony**, Drawing copies used in schools of, commended, 881.
Drawing given a prominent place in schools of, 880.
Various models of drawing copies used in schools of, noticed, 881.
- School of Art and Design of Maryland Institute**, Main purpose during recent years of the, 139.
- School of Design of Ohio Mechanics' Institute**, History and Reports showing evolution of the, 637-680.
Important changes in method of awards to pupils in the, 640-641.
Life class organized in 1877-1878, 640.
Opened in 1856 with 52 pupils, 637.
Organization of, in 1878, 640.
Report by principal of the, for the year 1881-1882, 645-648.
Reports of, under the new titles, 648-680.
Title of, changed to that of "School of Technology," in 1882, 648.
Title of, changed again to that of "Industrial and Art School," in 1884, 655.
- School of Industrial Arts, Geneva, Switzerland**, Account of the, 817, 818.
Object and Programme of studies in the, 818.
- School of the New York Turverein**, Drawing classes, 338-340.
Statistics of attendance and studies of the, (1882-1883), 339.
- School of Technology**, developed from School of Design of Ohio Mechanics' Institute, 648.
Of Ohio Mechanics' Institute, Report concerning the, by committee of Cincinnati Board of Trade, 1882, 650-657.
- School Life**, Table showing duration of, for one thousand pupils, 690.
- School Savings Banks**, Suggested by the Pratt Institute "Thrift," 545-548.
- Schools**, American, Changes demanded in, 738.
Free Evening Drawing, of the General Society of Mechanics and Tradesmen of the City of New York, 326-337.
How, make varied labor possible, 1065.
What Technical, and Polytechnic, have done for European countries, 849.
- Schools of Industrial Art**, Number needed in the United States to equal the ratio to population of such schools in England, 866-867.
- Schools of Mechanic Arts and Free Evening Drawing Schools** considered, 3.
The earliest, 6.
The youngest of the, 6.
- Schools of Science and Art**, Continual need of new models and studies in, 219.
Cooper Union, Attendance of pupils of (1888-1889), 398.
Cooper Union, Attendance of pupils of (1889-1890), 399.
- Schnurz, Hon. Carl**, Able address by, in promotion of Hebrew Technical Institute, April 22nd, 1886, 342.
- Schwabe, Dr. H.**, For Title of work by, comparing England and Germany in matter of Art Industry, in 1866, see note to, 878.
- Schwarz-Senborn, Baron von**, Austrian Minister to the United States, 860.
Reference to statement by, of the object of the Vienna Exposition, 841.
- Science**, Amazing development of, during Nineteenth Century, 402.
- Sculpture**, Exhibition of, at Vienna, disappointing, 853-854.
Italian, criticised, 854.
- Secondary Schools**, Courses of Manual Training recommended for, 906-907.
- Sgraffito**, Decorations described, 872-873.
- Sharp, Ph. M., E. L. S., Miss Katharine L.**, Director Department of Library Science, Armour Institute, 921.
- Sinclair, D. A.**, Paper on English Polytechnic Institutions by, 1039-1042.
- Skilled Labor**, Wealth-producing power of, 737.
- Skillman, Esq., George R.**, Address to graduates of Maryland Institute Commercial School, 1886, by, 198-200.
- Skinner, Miss Stella**, Director of Art Education in Public Schools of New Haven, Conn., Paper on "Art in the School Room," etc., by, xxxiii-xxxv.
Joint author of "List of Casts and Pictures for use in Schoolrooms," xxxiv.
Paper by, referred to, in note to page xxxiv.
Supervisor of Drawing, New Haven, Connecticut. Paper on "Manual Training for first four years of School," by 1098-1099.
- Sloyd**, Details of instruction in, as taught in The Throop Polytechnic Institute, California, 983-987.
- Sloyd Models**, and exercises in use of them, in Throop Polytechnic Institute, 985-987.
- Smith College**, Northampton, Massachusetts, referred to, 453.
- Smith, Mr. George Washington**, Tribute by President Sellers to, as one of the founders of the Franklin Institute, 22.
- Smith, Professor Samuel**, first instructor of Maryland Institute Drawing School in 1848, 275.
- Smith, Professor Walter**, the late distinguished Art Director of Massachusetts, referred to, 431.
Reference to the late, xxvii-xxx.
Was a professional sculptor, xxx.
- Smith, Mr. William C.**, president of the General Society of Mechanics and Tradesmen, New York City. Inaugural address (January, 1888) by, 319-320.
- Some European Industrial Art Schools**, An Account of, by Professor Carter, 799.
- South Kensington, London**, Branch Schools of, Mr. Hinton's suggestions concerning the, 762.
Methods of working Branch Schools of, 762.
- South Kensington Museum**, Loan of Art Collections by Authorities of, 769.
- South Kensington Schools**, Critical analysis of work of pupils of, shown at Vienna, 896-897.
- South**, Recent history of Education in the, set forth by Dr. Harris, 1064-1067.
School enrollment in 1876, of the, 1064.
School enrollment in 1894, of the, 1064.
Self-sacrifice of the people of the, for education, 1064.
What education has done for the, 1065.
- Sparkes, Mr. John**, Head Master of the Lambeth Art School, incited the artistic development of the Lambeth Pottery, owned by the Doultons, 851.
The Art Pottery, known as "Doulton Ware," was the direct outcome of the art training given to his pupils by, 851.
- Spence, Hon. Carroll**, Appeal to citizens in behalf of Maryland Institute Schools by, 152.
- Spencer, Mr. Herbert**, Quotation from, 644.
- Spring Garden Institute**, of Philadelphia, Pa. Account of the Night classes in Drawing and in Mechanical Handiwork of the, 107-127.
Account of the opening of additional rooms of the, with enlarged facilities, in 1878, 86-87.
Address by Governor Bigler, at dedication of the, 80.
Address by Governor Johnston, on laying the corner stones of the, July 8th, 1851, 78-79.
Agreement between Young Men's Institute and the, 77.
Annual Report for 1886-1887, treats of increase of Tuition fees, 98-99.
By-Laws of the, 74-75.
Ceremonies at dedication of building of the, 80-82.
Constitution of the, 72-73.
Completion of building announced in second annual report of the managers of the, 79.
Cooking School in the, opened in autumn of 1880, 80.
Death of John M. Ogden, first President of the, recorded, 88.
Early Reports by managers of the, 83-84.
Exhibition of Scholars' work, 1887, 100-101.
Far-reaching influence of schools of the, set forth, 85.

Spring Garden Institute, First Annual Report by managers of the, 76-79.
 First financial statement of, 81.
 First night school of, 71.
 Free night school of the, 84-85.
 The Fortieth Report of the, for 1891, the latest here recorded, 105-106.
 History of, 107.
 The history of, illustrates the evolutionary phases of similar undertakings, 71.
 Interesting development of the Day Art, and Technical Mechanical Art Schools, from the Night Classes of, 120.
 Interesting statement of progress of the Night Classes in Drawing, of the, 110.
 Kiln for baking porcelain painted by the art students, put in the, in 1881, 93.
 Lectures delivered before the, in 1880, 92.
 To Cooper Union, Likeness and unlikeness of, 70-71.
 List of names of the Committee on Schools of Drawing, and Design of, for 1891-1892, 120.
 List of Officials, for 1887-1888, 101.
 List of Officers and Committees, for 1892, 106-107.
 List of Original Incorporators of, 71.
 Mechanical Handiwork Day Schools of the, were closed in 1889 owing to opening of other such schools in the City, 103.
 New departure of, in 1878, 72.
 New departure of the, recorded in Twenty-seventh Annual report 1878, 85-86.
 Night classes in Drawing of, opened 1878, 107.
 The Official Direction of the, described, 88-89.
 Opening of the new "Schools of Mechanical Handiwork" of the, referred to, 87.
 Origin of the, 75.
 Participated in Industrial parade of the Constitutional Centennial, in 1888, 102.
 Programme of courses in night classes of Mechanical Handiwork of, 123-124.
 Statement of the activities and pecuniary condition of the, in 1887, 89-91.
 Statistics of night classes in Mechanical Handiwork of, from 1883 to 1891, 124-127.
 Technical School of Mechanical Handiwork of, 121.
Stanwood, Mr. James B., called to be the Director of the Technical School of Cincinnati, in 1889, 717.
Statement by Dr. J. C. Zachos, Curator, of the Cooper Union courses of Instruction (1873), 430.
 Of reasons for giving full details of courses in typical schools, rather than briefer accounts of many schools, 512-516.
Statistics of attendance in the Night School of Cooper Union, for 1868-1869, showing effect of lack of preliminary training in mathematics, 427-428.
 Of attendance in Cooper Union Night School of Art, for 1883-1884, 441.
 Of attendance in Cooper Union for 1887-1888, 396.
 Of educational work in Y. M. C. Association from 1893-1896, 1033-1035.
 Great importance that a thorough collection of, of production and wages be made, 1070.
 Importance of accurate, to show distribution of wealth, 1069.
 Need for intelligent analysis of economic, 1061.
 Reference to leading English authorities on, 1068.
 Present dependence upon estimates made by a few economic writers, instead of on authentic, 1070.
 Theories of economic Reformers, should be tested by accurate economic, 1071.
Stebbins, M. C., Hon. Henry G., President of Arcadian Club, when the reception of 1874 was given to Peter Cooper, 355.
Stetson, Mr. Charles B., Extracts from Introduction to Professor Lang's Austrian Report, by the late, 857-867.
 Recapitulation of arguments urged for Industrial Art Training of the people by, 863-864.

Stevenson, Mr. E. W., City Superintendent of Public Instruction, Columbus, Ohio, describes the Free Evening Drawing School, 722-724.
Stimson, Art Master, Professor John Ward, Excellent work of, referred to, 454.
Stine, Wilbur M., Ph. D., Director Department of Electricity, Armour Institute, 916.
Stowe, Mrs. Harriet Beecher, referred to, 11.
Stewart William, Chosen first president of Maryland Institute, January 10th, 1826, 137.
 Description of, by Hon. John H. B. Latrobe, 137.
Stuttgart, The Trade School of, Programme of courses of study in, 784.
Sulzberger, Mr. David, Secretary Hebrew Education Society of Philadelphia, referred to, 341.

T.

Tallman, Mrs. Sarah, Gift by, to Art Schools of Cooper Union, of statues, from estate of the late Mrs. Catharine C. Tallman, 400.
Teachers' College, New York, Account of general and special work in the, 1074-1086.
 Annual cost to pupils of instruction in the, 1078.
 Alliance of the, with Columbia College, and with Barnard College, 1076.
 The Horace Mann School, and the Macy Manual Training School, are the two main departments of the, 1076-1077.
 Introduction to account of the, 1074-1075.
 Buildings and Equipment of the, 1076-1077.
 Department of Elementary Teaching, 1078.
 History and Purpose of the, 1075-1076.
 The Horace Mann School of the, 1079-1085.
 List of Departments of the, 1078-1079.
 The Macy Manual Training High School of the, 1086-1091.
 Official Statement of Art and Industrial course given in the, 1078.
 Scope of the professional work in the, 1077.
Teachers of Technical Industry, Increased numbers in Europe of Trained, 785-786.
"Technical," The term as applied to an elementary school ambiguous, 686.
"Technical and Industrial Education Abroad," A paper read by Professor John D. Runkle, at the meeting of the Society of Arts in Boston, April 14th, 1881, 783.
Technical and Industrial Education in Europe, by Professor John D. Runkle, LL. D., 783.
Technical Education, Address to Teachers concerning, by Hon. George Woods, 735-741.
 Contrast between European and American opportunities for, 1016.
 Extracts from addresses on, 705-711.
 Plea for, by Dr. Zachos, 435.
 In Great Britain, Policy and methods of City and Guilds of London Institute for promoting, 1050.
Technical Evening Drawing Schools in European cities, 1048-1049.
Technical High School of Pratt Institute, Account of the year's work in the (1870-1871), 497.
 Course of Instruction for three years in the, 511.
 Described, with course of study in detail, 510-515.
 Course of Instruction in Drawing and in Manual work for boys and girls, in the, given in detail, 512-514.
 Requirements for admission to the, 514.
 What pupils must provide in the, 515.
Technical Mechanical School, Appeal for founding of a superior, in Maryland, 160.
Technical Museum, Usefulness of, 765-766.
Technical School Association of Cincinnati, Annual Report (1886) of the, 187.
Technical School of Cincinnati, Account of the, 684-720.
 Addresses delivered in 1888, at second anniversary of the opening of the, 705-711.
 Board of Directors of the, for 1889, 716.
 Combines features of St. Louis Manual Training School, and of that in Toledo, 685.

- Technical School of Cincinnati**, Daily programme of exercises of the, 1888, 713.
Detail of the four years' course in Drawing in the, 697.
Equipment of workshops of the, in 1892, 718-719.
Extracts from first catalogue of the, 695-705.
Extracts from first report by Principal Klemm, of the, 712-714.
Extracts from Prospectus of the, 694.
General course of instruction for four years in the, 696.
General Plan of the, 701, 704.
Historical Sketch of the, 687.
Mr. James B. Stanwood, succeeds Professor Klemm, as Director of the, in 1889, 717.
List of Board of Directors and Instructors of the, 705.
List of Faculty of the (1888-1889), 716.
List of Subscribers to fund of the, 715-716.
Outline of four years' course in the Department of Domestic Science of the, 698-699.
Rapid growth of the, in the first years, 686.
Report by Trustees of the, for 1889-1890, 717-718.
Report for 1891-1892, by Trustees of the, 718.
Sketch of a boy's life in the, 719.
The several influences leading to the establishment of the, 685.
Tuition fees of the, (1888), 695.
The Woodworking Department of the, 700-701.
- Technical Schools in Austria** modeled after the Komotau School, 786.
Four typical, in France, described, 756-760.
Mr. Hosea, on the need of, 643-644.
Large number of, on the Continent of Europe, 755.
A number of European, referred to, 755.
Importance of, to the Nation, 643.
Value of, to countries of Europe, 849.
- Technical Trade and Art Schools**, Need of, by the Nations, Stated by Commissioner Howard, 196.
- Technical Training**, America far behind Europe in opportunities for, 737.
In Art, Growing need of, 763.
A movement in the Cincinnati community in favor of, discernible, 684-685.
The Nation that neglects, must fall behind, 738.
Need for Elementary, 755.
Value of, to Girls, 704.
Value of, to Workmen, 740.
Varied benefits of, 737.
- Technology**, School of, Committee of Ohio Mechanics' Institute, appointed in 1880, to consider feasibility of opening a, 644.
- Technological Education**, Report by special committee of Ohio Mechanics' Institute on, in Fifty-fifth Annual Report of Institute, 649-652.
- Technological School by the Ohio Mechanics' Institute**, The opening of a, urged in annual address by Professor Frank Wigglesworth Clarke, in 1881, 645.
- Telegraphy**, Free School of, for women, first opened in Cooper Union in 1868-1869, 428.
- Thayer, Rev. George A.**, Address by, on occasion of second anniversary of Technical School of Cincinnati, 708-711.
Refers to the Toledo Manual Training School, 709.
- "The Schools of Art and Design,"** Responded to by Professor Otto Fuchs, at Dinner to President Cushing (1887), 209-210.
- Thomas S. Clarkson Memorial School of Technology, Potsdam, New York**, Account of the, 999-1011.
Account of the, in New York Tribune of July 15, 1895, 998-1000.
Circular issued by the, in spring of 1896, Extracts from the, 1001.
Concise statement of courses of instruction in the, 1003.
Courses in the, 1008-1011.
Concise statement of details of courses, 1005-1007.
Cost of tuition in the several courses, 1005.
Domestic Art courses, 1011.
Domestic Science courses, 1011.
- Thomas S. Clarkson Memorial School of Technology, Potsdam, New York**, Industrial courses in the, 1010-1011.
Is not a mere "Trade School," 1001.
Letter from Director Charles W. Eaton, of the, 1000.
Location, Buildings and Equipment of the, 1002.
List of Trustees and Executive Committee of the, 1011.
Metal-working course of the, 1010-1011.
Requirements for admission to the courses in the, 1003.
Statement of History and Purpose of the, 1001.
Woodworking courses of the, 1010.
Work of the School in Detail, 1007.
- Thompson, Professor Silvanus P.**, Article on the Apprenticeship of the Future, by, 751.
Introduction to Article by, 751.
- Thorne, Mr. William H.**, Director of Drawing School of Franklin Institute, Reports by, for 1882-1891, 59-70.
- "The Thrift,"** Pratt Institute, Objects and methods of, stated, 545-548.
- The Throop Polytechnic Institute and Manual Training School, Pasadena, California**, Account of, 969-987.
Course in Commercial Business, 981.
Courses in Domestic Arts, 978-979.
Courses in Drawing, Designing, and Painting, 979-980.
Departments of, etc., 970.
Details of courses in the Department of Shop work, 977-978.
Details of Instruction in Sloyd in, 983-987.
Founding and Location of, 969-970.
Library of, 970.
List of members of Corporation and Faculty (1895-1896), 982.
Statistics of attendance for 1894-1895, 982.
Schedule of courses in Academy and College, 976-977.
Teachers' Training Classes of, 975-976.
Work of Sloyd School, 975.
Shops, Drawing Rooms, and Laboratories of, 971-974.
- Times, New York**, Account of Peter Cooper, and the Schools of Cooper Union Institute, in the, 362-364.
- Tisdall, jr., Ph. D., Fitz Gerald**, Director Free Night Schools of Science and Art of Cooper Union, Summary of attendance of pupils for 1877-1878, by, 382-383.
Director Night Art Classes of Cooper Union, Report by (1873), 431.
Director Night Schools, Statistics of attendance in Free School of Art for 1878-1879, given by, 434.
- Toledo**, Manual Training School of, referred to in address by Rev. George A. Thayer, 708-711.
- Tome (Jacob) Institute, Port Deposit, Maryland**, Account of, 933-955. (For full index, see *ante*, under "Jacob Tome Institute.")
- Trade Classes of Pratt Institute**, Statistics of, 1888, 471.
- Trade School** course of Pratt Institute, 536-538.
Of Stuttgart, Concise Account of, 784.
- Trade Schools**, Public, a coming possibility, 525.
Tendency of this instruction given in schools of the Mechanic and Tradesmen Society toward that of Evening Schools. Statements by the Superintendents as to the, 334-335.
Trades should be taught in Technical, 777.
- Trustees of Cooper Union**, All original, living in 1891, except Mr. Cooper, 412.
Urge the need for additional endowment, 396.
- Trustees of Ohio Mechanics' Institute**, Appointed in 1847 to secure a home for the Institute, decided the property free from taxes, 1856, 614.
- Turin, Italy**, Museum opened in 1862 in, 827.

Turnverein, New York, has large collection of art casts, 339.
The New York, Evolution of the school of, toward Industrial Art Training, 338.

U

Union League Club, of New York, Memorial resolutions concerning Peter Cooper, passed by, 351-353.

United States, Artistic development of the, xxxvii.

Four model Industrial Training Schools in the, referred to, 751.

Industrial Art Education a prime necessity for the, 864.

Inferior showing in Art Industries made at Vienna, by the, 850.

Need for Industrial Training in Public Schools of the, 749-780.

Similar need of Industrial Training of youth in the, as in Great Britain, 751.

University of Pennsylvania, Tribute to the, by Mr. Fraley, 16.

V.

Vanderbilt, Commodore, Enduring memory of, secured by the University he founded, 572.

Van Kessel, Gen. Solomon, who commanded Fort Washington in 1792, was received at the exhibition of the Ohio Mechanics' Institute in 1840, 618.

Vansant, Joshua, Chosen first president of the new Maryland Institute, January 12th, 1848, 138.

Referred to, 155.

Vienna, Austria, Industrial Museum in, 828. Museum of Art and Industry in, 873.

Note on the South Kensington Museum, in account of the Industrial Museum in, 873.

Tribute to Americans who endow Educational Institutions, by a Professor in, 847.

Vienna Exposition, Abstract of Acquisitions by Museums from the, 832-833.

Abstract of sales to Museum made by each Country exhibiting in the, 833-834.

Vienna Universal Exposition of 1873, Appendices to Professor Archer's Report on the, 830-834.

A creditable showing made of machinery and other mechanical inventions, by the United States, in the, 838.

Eagerly studied by Americans, 823.

Educational importance to Austria, of the, 835.

Efforts made by France, to be well represented at the, 837.

Extracts from Reports of Massachusetts Commissioners to, 835.

Extract from Austrian Official Report of the, 857-901.

Importance given to Art Industries in the, 838.

In Fine Arts and Artistic Industries, the United States made a very poor showing in the, 838.

Massachusetts sends Commissioners to the, 823.

Notable displays of Artistic Ceramics by English exhibitors, in the, 838.

Papers relating to the, 823-901.

Poor showing made by the United States, in the, 838.

Principles of teaching Drawing stated in the Austrian Report on the, 865.

Striking advance shown in the exhibits of English Art Industries since 1851, 835.

Title of Professor Langl's Report on, 857.

Vienna Museum, Account of the, 845-846.

Admission to the, 846.

Aim of the, to improve and elevate public taste, 847.

Art Industrial School of the, 847.

Art Literature issued by the, 843-844.

Art Models circulated by the, 844.

Building described, 845.

Collections of the, 845.

Government of the, 846.

Vienna Museum, Impetus to formation of the, given by London Exhibition of 1862, 845.

The Literary Art publications by the, 845.

Opened in 1871, 845.

Society formed in 1869 to aid poor students to attend schools of the, 847.

Special Exhibitions by the, in other cities and towns, 848.

Varied activities of the, 847.

Visitors to, from 1864 to 1872, 846.

Vienna Polytechnic Institute, Concise account of the, 848.

Virchow, Professor, Quoted, 860.

Vocations, The Readjustment of, Article on, by Professor William T. Harrie, 746-747.

Voluntary Industrial Educational Associations, are substitutes for, or complementary to, the Public Schools, 6.

Diverse development of the, 6.

Noticeable tendency to specialization of technical training in, 5.

Purposes and evolution of, 4.

Similarity between, but individual development of, 5.

W.

Wagner, Mr. H. Dumont, Established the Drawing classes of the St. Mark's Working Men's Club, at Philadelphia, 129.

Wallis, Hon. S. Teackle, Address by, at Commencement of Maryland Institute Schools, 1881, 155-161.

Urges the establishment of a high-class Technical Mechanical School in Maryland, 160.

Refers to his former address in laying corner stone of Maryland Institute in 1851, 155.

Walter, Thomas U., Architect of the Capitol at Washington, referred to as an early student in drawing school of the Franklin Institute, 17.

Interesting sentence from report by, the venerable Architect of the Capitol, at Washington, 109.

Walters, Mr. William T., The Art Treasures of, give distinction to the City of Baltimore, 236-237.

Watson, Dr. Forbes, Practical usefulness of South Kensington Museum and Schools, as stated by, 766.

Waydell, John H., President General Society of Mechanics and Tradesmen, New York, Inaugural Address by, (1885), 296-298.

Introduces Gen. Stewart L. Woodford, 312-313.

Webster, Miss M. Rachel, joint author with Miss Skinner, of "Lists of Art works for School Rooms," etc., xxxiv.

Weeks, Professor Stephen B., will give Miss Skinner's paper on "Art in School Rooms" in Part II, of U. S. Commissioner's Report for 1895-96. See note to page xxxiv.

Weimar, Museum at, 874.

Wealth, The proper use of, 571-572.

What makes a city great? 410.

White, L. L. D., Hon. Andrew D., President Cornell University, Remarks by, at Arcadian Club reception to Peter Cooper, 358-359.

White, L. L. D. President E. E., Paper on "Technical Training in American Schools" by, referred to, 777.

Wilmer, Mr. Skipwith, Address by, at annual Commencement of Maryland Institute, 1887, 161-162.

Wilmerding School of Industry, Extract from Will of the Founder of the proposed, 989.

Wilson, President Joseph M., in annual report of January, 1888, states the needs of the Franklin Institute, 28-29.

Wilson J., Ormond, Ex-Superintendent of schools, Washington, D. C., referred to, 516.

Wistar, Esq., Richard, gave a building lot for the Spring Garden Institute, 75.

Woman in 1866, Grand medal of Cooper Union first awarded to a, 425.

Woman's School of Design, Cooper Union, Principal of, referred to, 373.

Opened as a part of Cooper Union Institute, in 1869, 374.

Women, Industrial Art offers new opportunities to, 850.
 Worth of training in Technical Industries to, 740.
 Free School of Telegraphy, first opened for, in Cooper Union, 1868-1869, 428.
Women's Art School Cooper Union, Enlargement of, made possible by Fayerweather's bequest, 411.
 Additional story of building given to (1890), 399.
 Endowment Fund of \$200,000 given to, from Fayerweather's estate, 410.
Woodford, Hon. Stewart L., Summary of address by, November 17, 1885, on occasion of Centennial Anniversary of the General Society of Mechanics and Tradesmen of the City of New York, 313-314.
Woode, LL. D., Hon. George, Reference to Address by, xlviii-xlix.
 Historical value of address by, 732.
 Address by, in 1874, in favor of Technical Education, referred to, 732.
 Address on Technical Education by, 735-741.
Woodward, Professor, D. A., Successor in 1855 to Mr. Minifie, in charge of Maryland Institute School of Design, 274.
 For many years in charge of Art Schools of Maryland Institute, retires in 1879, 143.
Woodward, Prof. C. M., St. Louis, Mo., Reference to important chapter on "Manual Training" in the 1893-1894, Report of the U. S. Commissioner of Education; by, 1073.
Woolman, Miss Mary Schenck, Teachers' College, New York City, Paper on "Sewing in the Primary Schools" by, 1100-1101.
Workmen, Dangers threatening to, from rapid changes in methods of the applications of power from steam and electricity, foreseen by Peter Cooper, 407.
Workshop Instruction, Value of, Asserted by Austrian Department of Commerce, 786.
World's Columbian Exposition, President Allison, of Ohio Mechanics' Institute, urges the Institute to take active part in the, and cites recommendation of the U. S. Commissioner of Education, 633-635.
World's Fairs, Educational importance of, 840.
Wright, Miss Jessie, Paper on "Manual Training in first four grades of the Workingman's School" by, 1099-1100.
Wright, Secretary Stephen M., Extracts from the Historical Appendix to the pamphlet commemorating the celebration of the Centennial of the General Society of Mechanics and Tradesmen by, 314-318.

Württemberg, Admirable showing at Vienna's Exposition made by the Industrial Schools of, 877.
 Attention given to Industrial Education in, 877.
 Royal Central Institute for Trade and Commerce, Concise account of the, 830-831.
 Statistics of "Industrial Improvement" and Drawing Schools and attendance on them in, 877.

V.

Young Men's Christian Associations, Arrangement of exhibition work shown by the, considered, 1045-1046.
 Classes for special instruction in the, Suggestions concerning, 1025-1027.
 Of North America, Concise statement of the organization of the Educational Department of the, 1042-1043.
 Of North America, Educational Department of the, organized October 1, 1892, 1042.
 Educational Department, Annual Report of the, for 1896, 1046-1051.
 Educational Exhibits, Statements concerning the, 1043-1046.
 Educational exhibitions, Uses of, 1045.
 Educational exhibitions made by the, Kinds of, described, 1044-1045.
 Evening Classes of the, 1042, 1043.
 Increase of Industrial Courses in the, 1046.
 Industrial Education Movement undertaken by the, 1013.
 Introduction to account of the Industrial Education Movement by the, 1013-1014.
 Main purpose of the, stated, 1021-1022.
 Social clubs connected with the, 1046-1047.

Z.

Zachos, Mr. J. C., Curator of Cooper Union Schools, 379.
 Curator of Cooper Union in Fourteenth Annual Report (1873) discusses at length the night school and the need of similar schools in other towns, 428-431.
 Plea for technical education by, in Twenty-second Annual Report, 1881, 435.
 Statement by, Curator of Cooper Union, showing, in 1873, the work of the various departments of the Institute for the first twenty years, 379-382.
 Summary of report for 1883, 390-391.
 Summary of report of Schools from 1885 to 1887, 394-395.
Zwilling, Mr. George, Principal of Erie Free Evening Drawing School, 1888-1889, 727.

